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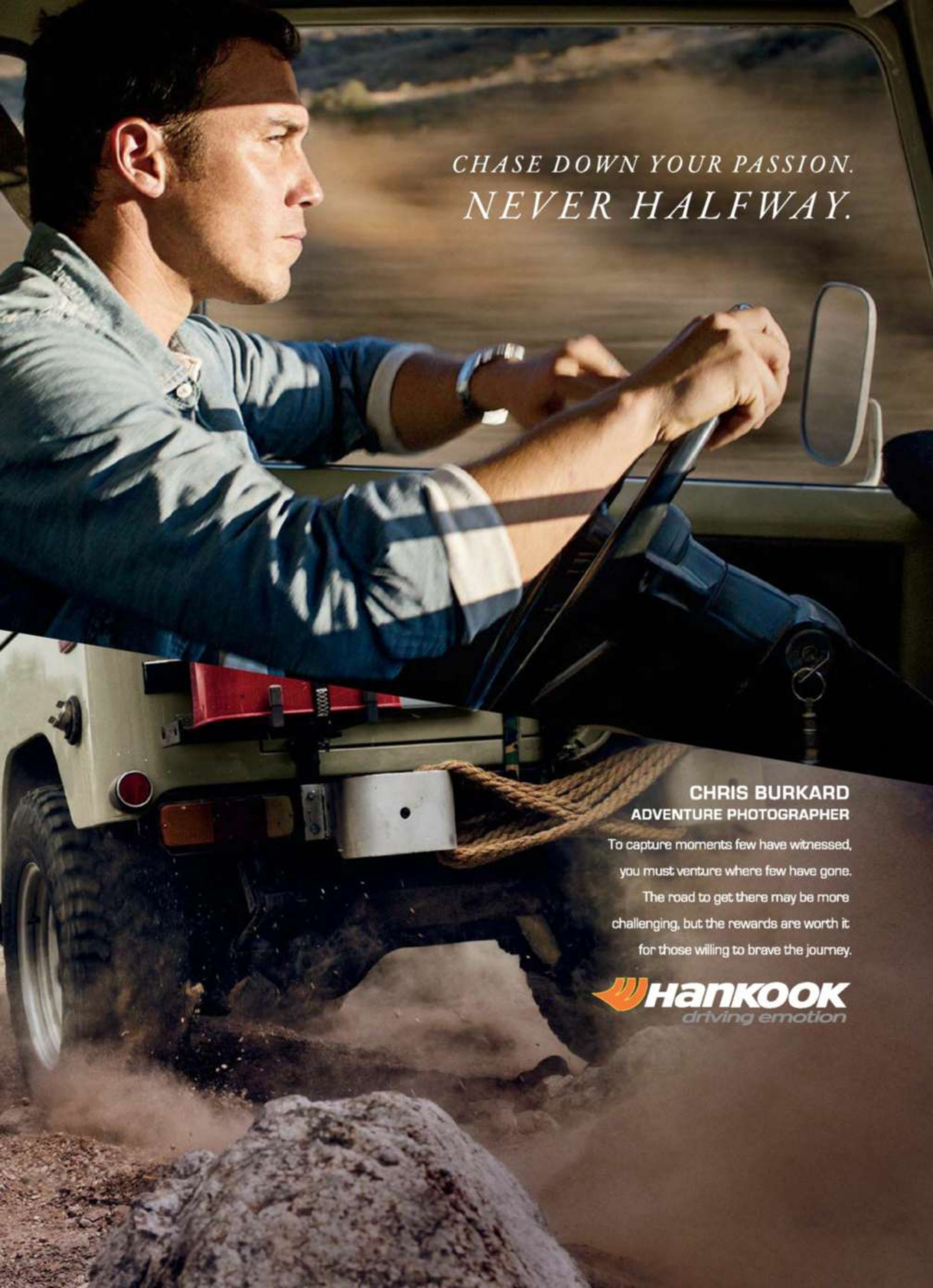
RDX with Advance Package shown. *20 city/29 highway/23 combined mpg rating for RDX FWD model. Based on 2016 EPA mileage ratings. Use for comparison purposes only. Your actual mileage will vary depending on how you drive and maintain your vehicle. ©2015 Acura. Acura, RDX, and the stylized "A" logo are registered trademarks of Honda Motor Co., Ltd.



RDx

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A man with dark hair, wearing a blue and white plaid shirt, is driving a vehicle through a rocky, dusty landscape. He is looking forward with a focused expression. The vehicle is a light-colored SUV or truck, and the wheels are kicking up a cloud of dust. The background shows a hilly, arid landscape under a bright sky.

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The Lohdown

Change of the Year



Longtime readers will notice that something is missing from this December issue. That's right. We're not announcing Sport/Utility of the Year, as we have since we first expanded our Of the Year awards to include SUVs in the December 1998 issue. The normal cadence for our OTY awards has traditionally been Sport/Utility of the Year in December, Car of the Year in January, and Truck of the Year in February. But all that is about to change.

On November 16, 2015, we're going to do something we've never done in the 66-year history of *Motor Trend*. On that Monday evening, at the groundbreaking YouTube Space: Los Angeles, we're going to reveal our Car, Truck, and SUV of the Year for 2016 at a celebratory gala. What makes this event extra special is not just that we're announcing all of the winners at one time and place but that it will be a complete surprise for all in attendance.

In years past, after we've finished an Of the Year program and selected a winner, one of my duties was to contact the winning manufacturer, congratulate them, and then work together on a reveal plan that coincided with the upcoming issue. For 2016 (and beyond), the winners of Car, Truck, and SUV of the Year will not find out they've won until we open the envelope and announce it to the world—and in the pages of the January 2016 issue, which conveniently goes on sale that same week.

In addition, we're going to announce our Person of the Year, which is a natural extension of our vehicular Of the Year awards and

of our annual Power List feature, which ranks the 50 most influential people in the automotive industry.

To highlight the significance of this occasion, we've redesigned the iconic Of the Year golden caliper trophy. It is now bolder, brawnier, and even more golden, but it's still backed by all the rigor, integrity, and transparency that makes it the most coveted award in the industry. Our new *Motor Trend* caliper trophy will debut in all its golden glory at our Of the Year awards show.

Would you like to be there in person for our awards celebration? Of course you would, and if you're among a select few in the automotive industry, you should have already received an invitation in your mailbox. (If not, hit me up on Twitter @edloh ASAP!) Not a member of the auto industry? No problem. You can still join the party via a free livestream on our YouTube channel (youtube.com/motortrend) or www.motortrendondemand.com, our new video-on-demand service. Livestream coverage begins at 7:30 p.m. PST on November 16, 2015.

Whether in person or via livestream, please join us as we make history. ■

On November 16, 2015, we're going to do something we never done in the 66-year history of *Motor Trend*.



We entrusted the redesign of the golden calipers to Society Awards, which also crafted the Emmy, Billboard Music Award, and MTV "Moonman" trophies. Designer Vicky Fotopoulos sketched us a few possibilities before working up a digital wireframe.



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Drivers' Alert: Driving in fall and winter can expose you to the most dangerous glare... do you know how to protect yourself?

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Not all sunglasses are created equal. Protecting your eyes is serious business. With all the fancy fashion frames out there it can be easy to overlook what really matters—the lenses. So we did our research and looked to the very best in optic innovation and technology.

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Some ordinary sunglasses can obscure your vision by exposing your eyes to harmful UV rays, blue light, and reflective glare. They can also darken useful vision-enhancing light. But now, independent research conducted by scientists from NASA's Jet Propulsion Laboratory has brought forth ground-breaking technology to help protect human eyesight from the harmful effects of

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Studies by the National Highway Traffic Safety Administration (NHTSA) show that most (74%) of the crashes occurred on clear, sunny days



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TREND 12.15

INTAKE P20
THIS MONTH'S HOT METAL

WE SAY P30
WORDS FROM OUR EDITORS

DETOUR P36
GEAR, FACTS, INFO

FIRST LOOK

Porsche Mission E Concept



Porsche is getting ready to enter the all-electric sedan fray. The Mission E concept

previews a future production model that will give the Tesla Model S a run for its money. In addition to running on an 800-volt system, the concept makes more than 590 hp and has a Porsche-estimated range of 311 miles.

The Mission E with its extra-wide fenders and signature quad-LED headlights looks almost like a four-door 918 Spyder from the front. It measures just 51.2 inches tall with a radically swept roofline that gives it a true fastback look, unlike the current Panamera. The lack of a B-pillar gives the Mission E a clean profile, and air inlets and outlets in the front fascia and fenders help it reduce lift and cut through the air.



NOW YOU SEE Digital gauges reposition themselves, so no matter how you're seated, you'll always be able to see them.

But the real magic happens underneath the sheetmetal. Porsche claims the 800-volt drive system is the first of its kind. (Today's fastest chargers rely on 400-volt systems.) Two permanently excited synchronous electric motors similar to the units used in

the Le Mans-winning Porsche 919 Hybrid LMP racer supply more than 590 hp, allowing for acceleration from 0 to 62 mph in less than 3.5 seconds. The drive system is capable of delivering its full power even after multiple bursts of acceleration, according to Porsche. The concept also

benefits from all-wheel drive with Porsche Torque Vectoring, which can automatically send torque to individual wheels. In addition, the Mission E features all-wheel steering. All of this equipment helped the concept lap the Nürburgring's Nordschleife in less than 8 minutes, Porsche claims.

The lithium-ion battery pack is mounted in the car's underbody and spans the entire length between the front and rear axles. This gives the Mission E excellent weight distribution and a low center of gravity. The Mission E can be fast-charged to 80 percent in roughly 15 minutes. The car is also capable of wireless inductive charging through a coil on the bottom of the car. The system



800 VOLTS The Porsche Mission E charging voltage is double any other electric car out there—everything else tops out at a nominal 400 volts—and means an 80 percent charge in 15 minutes.



**“If you follow others,
you always follow.”**



THEY SAY P38 INTERVIEW
JOHAN DE NYSSCHEN, PRESIDENT CADILLAC



YOUR SAY P40
 READERS TALK BACK

RIDING HIGH The Porsche Mission E concept rides on amply sized 21-inch front alloy wheels and 22-inch rears.



reduces weight by downsizing the cables to a smaller gauge. The sedan's mixed-material body, made of aluminum, steel, and carbon-fiber-reinforced polymer, also keeps weight down.

Inside, the concept boasts a number of innovative features. Just as with the Tesla Model S, the absence of a transmission

tunnel allows for an open cabin. It seats four, each passenger getting his or her own racing-inspired seat. The gauge cluster is a freestanding, curved OLED screen with five round digital instruments. An eye-tracking system follows the driver's eyes to the gauge he or she is viewing. The system will then activate the menu for that instrument, which the driver can navigate using the steering wheel controls. Even if the driver's seating position changes or their body leans mid-turn, the gauges will be placed in the optimal position. A holographic display shows apps in 3-D. **Alex Nishimoto**



Intake

COSTLY Recalled cars will have to have urea-injection systems installed or be reprogrammed. Either option is expensive.



VW Faces Billions in EPA Fines



Volkswagen Group (Volkswagen AG) has admitted to cheating on diesel emissions regulations for the past six years. The admission comes after independent investigations showed vehicles equipped with Volkswagen AG's 2.0-liter TDI turbodiesel four-cylinder emitted far more nitrogen oxides (NOx) in real-world conditions than during laboratory emissions testing.

After more than a year of scrutiny and an ineffective voluntary recall, VW admitted to installing special cheating software, which only activated emissions controls during emissions testing, on vehicles equipped with the four-cylinder diesel engine. The U.S. government has ordered the company to recall roughly 482,000 affected Volkswagen and Audi cars. The U.S. Justice Department could levy a fine of up to \$37,500 per vehicle, or about \$18 billion, for two violations of the Clean Air Act.

Affected vehicles include the 2009-2015 Volkswagen Beetle TDI, Beetle Convertible TDI, Golf TDI, Jetta TDI, and Jetta Sportwagen TDI; the 2012-2015 Volkswagen Passat TDI; 2015 Golf Sportwagen TDI; and the 2009-2015 Audi A3 TDI.

Shortly before press time, Volkswagen AG revealed that the software is present in roughly 11 million vehicles worldwide.

The problem was found in May 2014 during testing by West Virginia University's Center for Alternative Fuels, Engines, and Emissions and the International Council for Clean Transportation.

When confronted by regulators, Volkswagen AG engineers blamed "technical issues" and "unexpected conditions," according to a notice of violation the EPA sent to VW. Volkswagen AG performed a voluntary recall in December 2014, but retesting by EPA and CARB found "limited benefit."

Volkswagen AG engineers admitted to the deception on September 3, 2015, after the EPA

and CARB refused to certify 2016 Volkswagen and Audi four-cylinder diesel models for sale until the issue was resolved. According to the notice, Volkswagen AG engineers wrote two different emissions programs into the engine computer. Additional software would monitor "various inputs including the position of the steering wheel, vehicle speed, the duration of engine operation and barometric pressure" to determine when the car was undergoing emissions testing. During a test, it would run the "dyno calibration," which put emissions controls such as the lean NOx trap (all models) and selective catalytic reduction (AdBlue urea injection, 2012+ Passat and all 2015 models) into full effect. After testing, the computer would revert to the "road calibration," which turned off the emissions controls and resulted in more power and better real-world fuel economy at the expense of NOx emissions 10-40 times higher than the legal limit.

NOx emissions are linked to medical conditions including asthma, emphysema, and bronchitis and contribute to tens of thousands of deaths every year.

As a result of the scandal, Volkswagen AG stopped sales of all 2015 and 2016 models equipped with the four-cylinder turbodiesel engine, as well as all affected used cars on dealer lots, until a solution is found. The company will be forced to recall all the affected vehicles and bring them into compliance. How it will do so was unknown at press time.

According to a source with expertise in the field, Volkswagen AG saved roughly \$400 per car not outfitting them with urea injection systems, or roughly \$200 million total for U.S.-market cars over six years.

Nick Molden, founder and CEO of our Real MPG partner, Emissions Analytics, explains

that diesels, particularly Volkswagen AG diesels, tend to perform unusually well in Real MPG testing compared to EPA testing. "Of the models [affected by the recall], we've tested the 2014 Jetta and 2015 Golf on several occasions," he said. "On average, these were 12.2 percent above EPA combined fuel economy [rating], unusually good. We have not tested the Audi A3, [but] we have tested five Audi [V-6] diesels, which on average only exceeded EPA by 0.7 percent, backing up suggestions that the defeat devices may have only been deployed on the [I-4] A3."

Beyond the potential fines related to the Clean Air Act violations and the cost of a recall, the fallout from the scandal could be wide-reaching for Volkswagen AG. Potential civil, criminal, and class-action suits will

likely be brought against the company and its employees and executives. The scandal has also prompted inquiries by several foreign governments.

Volkswagen sales in the U.S., already down 3 percent through August, will no doubt suffer. The company's struggling bid to raise its U.S. market share is also in jeopardy, and its "clean diesel" marketing campaign is likely

finished. Volkswagen AG stock dropped nearly 23 percent in the first day of trading following the admissions, wiping out more than \$17 billion in value. The resale value of affected Volkswagen vehicles will no doubt suffer, as well.

The fallout was more immediate for CEO Martin Winterkorn. Less than one week after the scandal went public, Winterkorn resigned but denied knowledge of the cheating. The embattled executive had survived an attempt to oust him earlier this year and was in the middle of negotiations with the board to renew his contract for two more years.

It is unlikely that Volkswagen AG will pay the full \$18 billion fine. Historically, the U.S. Justice Department has not levied multibillion-dollar fines against auto companies. Toyota paid \$1.2 billion to settle the unintended acceleration case, and Hyundai-Kia paid just \$300 million to settle charges that it falsified its EPA fuel economy numbers. GM recently announced it would pay \$900 million to settle charges in the ignition switch recall, in addition to the money paid out through its Victim's Compensation Fund.

Scott Evans



Martin Winterkorn, former VW CEO

After more than a year of scrutiny and an ineffective recall, VW admitted to installing cheating software.





From Aston with Love: James Bond's DB10



Bond has been seen behind the wheel of everything from a drop-top Toyota

2000GT to an AMC Hornet, but for most people the special agent is linked to an Aston Martin. Although Daniel Craig's Bond is perhaps the edgiest the franchise has ever been, in many ways the filmmakers have managed to boil down Bond's essence to the most pure ingredients. What does that mean for car enthusiasts? Gone are the days of heavy-handed product placement (sorry, BMW) and silly over-the-top stunts. Bond and Aston Martin are back in a big way, and all is right in the world of British secret agents.

Since Daniel Craig has donned the tuxedo, Bond has seen seat time in a DBS and the iconic DB5 first seen in the Connery era. But in the most recent Bond film, "Spectre," 007 is about to get a very special car from the Q branch. It's dubbed the DB10 and will never see production, but it hints heavily at where Aston Martin plans to take the brand's design direction.

Only eight DB10s were produced for the film. Two of the cars are fully completed hero cars with production-ready interiors, bespoke wheels, and clean exteriors devoid of rigging and Q gadgets. Another two of the DB10s were built for used with external driving pods, which allow

a stunt driver to pilot the car on the roof while Craig simulates driving behind the wheel. The pod is designed to be movable, so the throttle is drive by wire, and the brakes and steering use fluid transfer. By removing any direct mechanical connections, the filmmakers were able to place the pod anywhere on the car, enabling clean shots of Bond "driving" in real-world conditions without using green screens.

There are two stunt cars that feature clean exteriors but have reinforced underbody panels and a strengthened front grille. In order to perform stunts and accommodate large amounts of camera gear, the cars had to be tweaked after they were delivered from Aston Martin. These modifications include bespoke dampers for additional ride height and to account for heavy camera loads on the nose, stronger underbody skidplates and enforced grilles for a scene that includes driving down a steep set of stairs, and a full rollcage for rigidity and safety. Stunt driver Mark Higgins helped dial in the suspension settings for each car

to extract maximum performance depending on the scene and what the car was carrying. As a result, other than some minor CGI to remove stunt cables and swap out the faces of stunt drivers, all the car chases in "Spectre" are 100 percent real. Because of the expensive body carbon-fiber body panels, though, they decided not to show damage throughout the chase scenes.

The final two DB10s feature some additional 007 surprises. Although Aston Martin offered to design many of these special features into the car, the filmmakers felt that they would feel too refined. They instead opted to create them after the cars were finished so they'd have a more authentic tacked-on look and feel.

With a Vantage V-8 engine, the DB10 is plenty quick. While filming a chase scene in Rome, the helicopter filming had to tell the Aston to slow down. However, we're told the Mercedes ML63 AMG camera car kept up just fine with its twin-turbo V-8. The Bond villain's car is a Jaguar C-X75 featuring a Jaguar F-Type-sourced V-8 instead of the complicated hybrid powertrain from the original concept car.

Before becoming Bond's ride, the design study that became the DB10 already existed. Director Sam Mendes saw it and fell in love, which led to Aston Martin creating the cars for the film. **Jim Gleason**



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Hope you like that **Porsche Mission E concept** because it's happening. We hear it'll be in 2018 as a 2019 model, which would be a shockingly fast turnaround unless Porsche is much further in the development process than expected. Even so, there are other hurdles, the biggest being charging infrastructure. It's great the car can charge super-quick on an 800-volt feed, but if you know where to find one of those, let us know. Even Tesla only charges at 400 volts, and they had to build their own network just to pull that off. Then there's the matter of the name...Hope you like the **Bugatti Vision Gran Turismo Concept**, too, because it's a thinly veiled preview of the upcoming Veyron replacement, the **Chiron**. Sources who have seen the Chiron say the Vision Gran Turismo is sort of the DTM version if one were to exist. We're hoping to see it next spring in Geneva...Elsewhere in uber-luxury, **Aston Martin is doing a crossover**. Surprising, we know. Word out of Gaydon is it'll look something like the DB10 from "Spectre." It will likely debut around the same time as the new DB11 coupe, which is slated to break cover next year...**That lower, meaner looking AMG GT mule we've seen running around the Nürburgring is 100 percent for real**. Right now they're calling it GTX. Sporting about 600 hp, the new more track-focused GT will feature active aero pieces, much wider rear tires, electric rear steering like Porsche offers, and trick spool-valve shocks from Multimatic, of Z/28 fame. Expect this car to be an absolute monster when it shows up at the tail end of 2016. Oh, and this is NOT the Black Series. That comes later, and it will sport a V-12...**Kia is planning** to roll its seven-speed dual-clutch transmission out across the line soon. It's already in a few models, and before long it'll be in every front-wheel-drive vehicle the company makes.

ON THE TRAIL OF THE

2016 CHEVROLET SILVERADO

WITH THE FOLKS WHO CREATED IT.

The 2015 Silverado 1500 was named **"Highest Ranked Large Light Duty Pickup in Initial Quality"** by J.D. Power¹ and the new 2016 Silverado comes from the same stock. The new face of strong, Silverado has a muscular front end that reflects its strength and capability. We sat down with the team of designers and engineers behind the new Silverado, the latest addition to the family of the most dependable, longest-lasting full-size pickups on the road.²





JOHN CAFARO

EXECUTIVE DIRECTOR,
GLOBAL CHEVROLET DESIGN

This Silverado makes some great advances using new lighting technology. How did this technology inspire the vehicle design?

Lamps are the windows to a truck's soul. They help give a truck its signature look — both during the day and at night. The new LED lamps on the 2016 Silverado gave us the opportunity to create a stronger, more expressive front end while giving our drivers a substantial improvement in night driving and overall visibility. It highlights how much technology is in the truck.

Truck design is one of the hottest areas in automotive design right now. What are some of the synergies between truck and other vehicle design?

Corvette and Silverado have been the iconic bookends for Chevrolet design for more than 50 years. In the past, they had completely separate design teams. We now have a lot more cross-pollination in our design teams and design work. You can see that influence especially in the hood and grille. These trim details allow customers to express personality. Grilles are like cowboy boots — they are your calling card.

“Grilles are like cowboy boots — they are your calling card.”

John Cafaro

EXECUTIVE DIRECTOR, GLOBAL CHEVROLET DESIGN



TIMOTHY ASOKLIS

CHIEF ENGINEER — 2016 FULL-SIZE TRUCK,
CURRENT PRODUCT SUPPORT

The new Silverado was engineered with multiple enhancements, including articulating running boards. How do they work?

A new feature on Silverado, available articulating running boards automatically extend down and out from the sides of the cab to act like traditional steps. Just tap the foot control and they articulate rearward for access to the bed and its contents. No competitor offers this feature.

Towing is important in a truck. What advances set the 2016 Silverado apart when it comes to towing capability?

Throttle progression and grade braking are features that have come from our engineers studying the challenges of pickup truck towing in the real world. Throttle progression, along with our available 8-speed automatic transmission, makes accelerating with a heavy tow load both smooth and quick.

Using intelligent and adaptive algorithms, steep hills are more easily handled with Grade Braking Mode, which transfers some of the burden of slowing down and stopping from the brake pads to the engine and transmission.



¹ The Chevrolet Silverado LD received the lowest number of problems per 100 vehicles among large light duty pickups in the proprietary J.D. Power 2015 Initial Quality Study.SM Study based on responses from 84,367 new-vehicle owners, measuring 244 models and measures opinions after 90 days of ownership. Proprietary study results are based on experiences and perceptions of owners surveyed in February–May 2015. Your experiences may vary. Visit jdpower.com. ² Dependability based on longevity: 1987–April 2013 full-size pickup registrations.

Intake

DRIVE ON, GOOD CHAP Td6-engined Range Rovers can cruise for 658 highway miles on one tank of diesel.



2016 Range Rover Td6; Sport Td6



Approximately half the Range Rovers and two-thirds the Range Rover Sports sold in the United States last year were powered by the 340-hp, supercharged, 3.0-liter V-6 engine. Care to guess the percentage sold in Europe with this entry-level powerplant? Zero. Zip. Nada. Land Rover doesn't even offer the gasoline V-6 over there. If you want to drive a six-cylinder Rangie, you have one choice: the 3.0-liter V-6 turbodiesel Land Rover calls the Td6.

The Td6 engine powers 90 percent of the Range Rovers sold in Europe, and 50 percent of those sold worldwide. And now it's come to America, available in 2016 Range Rover and Range Rover Sport models. The Td6s will deliver 32 percent better fuel efficiency than their V-6 gas counterparts, according to Land Rover. EPA consumption numbers are 22/29/25 mpg city/highway/combined. On an interstate road trip, that means a cruising range of 658 miles.

The downsides? The engine costs \$1,500 more. The Range Rover Sport Td6 starts at \$67,445, while the Range Rover Td6 costs \$87,445. And the 0-60-mph acceleration is two-tenths slower in the Sport Td6 and

Newcomer



three-tenths slower in the bigger, heavier Range Rover Td6. Neither is enough to warrant a second thought. Unless you want a V-8, or only do short trips, this is the engine for you.

Why? The 440 lb-ft the Td6 engine grunts out at just 1,750 rpm, that's why. All that torque at such low revs makes both Range Rovers, already great tourers, feel effortlessly relaxed on the road. While not as quick from a standing start, there's a liveliness and responsiveness to the midrange rolling acceleration

you don't quite get with the gas V-6, especially as the eight-speed auto has been nicely calibrated to surf the torque curve.

Off-road the Td6 delivers solid low-speed lugging power. Working in combination with Land Rover's new All-Terrain Progress Control—a sort of off-road cruise-control system—it makes both Range Rovers even more compellingly capable and foolproof in the rough stuff. **Angus MacKenzie**



The Td6 engine grunts out 440 lb-ft at just 1,750 rpm for an effortlessly relaxed feel on the road.

SPECIFICATIONS Base Price Range \$67,445-\$87,445 Vehicle Layout Front-engine, 4WD, 5-pass, 4-door SUV Engine 3.0L/254-hp/440-lb-ft turbodiesel DOHC 24-valve V-6 Transmission 8-speed automatic Curb Weight 4,750-4,900 lb (mfr est) Wheelbase 115.0-115.1 in L x W x H 191.0-196.8 x 78.1 x 70.1-72.3 in 0-60 MPH 7.1-7.2 sec (mfr est) EPA City/Hwy/Comb Fuel Econ 22/29/25 mpg Energy Cons, City/Hwy 171/130 kW-hrs/100 miles CO2 Emissions, Comb 0.90 lb/mile On Sale in U.S. Currently

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Intake

PACK LIGHT There's a maximum 12.4 cubic feet of cargo space in the Fortwo.



2016 Smart Fortwo



The Smart Fortwo, codeveloped with Renault, is still 106.1 inches long for parallel-parking ease. But now it's 4.1 inches wider and 0.5 inch taller, and the wheelbase is extended 0.2 inch, lessening the cramped feeling inside. The new-to-Fortwo powertrain has a five-speed manual transmission clinging to a rear-mounted, turbocharged, 0.9-liter three-cylinder. The cabin is jazzed up to feel like that of a modern car instead of a DaimlerChrysler-era Mercedes A-Class, with a posher interior and pretty decent (for the 73.7-inch wheelbase) ride.

We spent the entirety of our Smart encounter driving the right representative car, the one armed with the \$990 Getrag-sourced six-speed twin-clutch automatic. Smart expects 80 percent of its customers to choose the auto over the manual. If you never experienced the previous Fortwo's five-speed automated manual, you'll think the new dual-clutch transmission is the most normal tranny option in the world. The six-speed's shifts are executed in a reasonable amount of time, and it's clear Smart wasn't aiming to have the quickest gear changes in the industry.

Depending on your personal views, you'll either be elated

Newcomer



or bummed that shifts no longer theatrically pitch driver and passenger forward and back, as in the old car.

The new car is zippy once it gets up to speed but needs some driver assistance from a stop. It takes a second or two from the moment the accelerator pedal is matted for the Fortwo to wind up and start galloping with urgency, a vital point of consideration when making unprotected turns in busy intersections.

As the Fortwo's weight hovers in the one-ton

range and the car features a remarkable 22.8-foot turning circle, the car's home and heart are in the city. There is perhaps no other car sold in the U.S. as singularly fixated on ensuring driving and especially parking is as painless as possible. For that select minority who'll put up with the double seating and premium-octane gas consumption for urban convenience, the Fortwo is the absolute right choice. **Benson Kong**



With its tiny footprint and 22.8-foot turning circle, the Fortwo's home and heart are in the city.

SPECIFICATIONS Base Price Range \$15,400-\$19,230 **Vehicle Layout** Rear-engine, RWD, 2-pass, 2-door hatchback **Engine** 0.9L/89-hp/100-lb-ft turbocharged DOHC 12-valve I-3 **Transmissions** 5-speed manual; 6-speed twin-clutch auto **Curb Weight** 2,000-2,050 lb (mfr) **Wheelbase** 73.7 in **L x W x H** 106.1 x 65.5 x 61.2 in **0-60 MPH** 10.1-10.5 sec (mfr est) **EPA City/Hwy/Comb Fuel Econ** 33-34/39/35-36 mpg **Energy Cons, City/Hwy** 99-105/86 kW-hrs/100 miles **CO2 Emissions, Comb** 0.54-0.55 lb/mile **On Sale in U.S.** Currently

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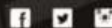
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We Say...



Ron Kiino
THE KIINOTE

5 for '15 A handful of great rides from 2015



December is the time of year to look back and reflect on the last 12 months—at least that's how I convince myself that that blur of a

year indeed stretched 365 days. For me, most of twenty-five was spent in Japan, where my wife's Fulbright Scholar grant led our family and where I got to experience many memorable machines. Some of them—the go-kart Honda S660 *kei* car and the retro-fantastic Toyota Land Cruiser 30th Anniversary pickup—I covered in this space. But I'd be remiss not to mention five others that left a lasting impression.

Honda Jade Save for a few stylish, utilitarian people-movers—e.g., the Audi Allroad, BMW 3 Series Sports Wagon, and VW Golf SportWagen—wagons can't seem to escape the black hole in the land of the red, white, and blue. In Japan, though, they're beloved. Based on the Civic platform, the Jade is a sleek, sporty offering with a deceptively roomy six-passenger, three-row cabin and Honda's new 1.5-liter, turbo I-4 making 148 hp and 150 lb-ft of torque. I like the HR-V, but I'd take the Jade any day of the week.

Honda StepWGN Competing in Japan's MPV segment of mini minivans, the StepWGN is 12.5 inches narrower and 16.5 inches shorter in length than a U.S. Odyssey yet still accommodates up to seven passengers in comfort. The coolest feature is a dual-mode tailgate that allows 60 percent to



HONDA JADE RS



SUBARU CROSSOVER 7

be opened laterally (to load passengers into the third row or cargo when a car's parked close to the rear bumper) or 100 percent vertically. Ingenious. Better yet, the third row disappears flat into the floor, and the standard 1.5-liter turbo packs a punch. Without a doubt, it's the best minivan I've driven.

Nissan NV350 Caravan Classified as a cab-over-engine midsize commercial van, Nissan's NV350 Caravan accounts for roughly 25 percent of the 100,000-unit segment in Japan. The Caravan isn't especially big—in its largest form (high roof, long wheelbase), it's 34.7 and 15.0 inches smaller in length and height, respectively, than a U.S. NV2500 high roof—but nonetheless accommodates up to 14 passengers. It's relatively narrow, too—just 5.9 inches broader than a compact NV200, making it easy to maneuver through Tokyo's tight confines. The available 2.5-liter diesel good for 263 lb-ft at 1,400 rpm makes me wish the Caravan is the NV we got.

Subaru Crossover 7 Formerly known as just the Exiga, the Exiga Crossover 7 follows

Subaru's Outback philosophy, which is to start with a wagon, jack up the suspension, and throw on cladding. It works. I borrowed a Crossover 7 for a family adventure up to the historic mountain town of Nikko, and let's just say the Griswolds got nothing on us Kiinos. Seating for seven? Check. Family truckster styling? Check. A tried-and-true flat-four paired with all-wheel drive and paddle shifters? Checkmate.

Toyota Vellfire Hybrid If Toyota ever had the harebrained idea to slap a Lexus badge on a van and market it to affluent snowbirds and upscale livery outfits, it'd look no further than the Vellfire Hybrid. My tester exhibited a bold chrome-laden style that would make a Sienna run for cover and a posh cabin decked out in enough wood, leather, aluminum, and quilted captain's chairs to give an LX 570 an inferiority complex. With a 2.5-liter, 150-hp I-4 and two electric motors propelling all four wheels, the Vellfire Hybrid teams V-6 oomph with 30-mpg economy. The 2017 VX 250h—I'm dreaming about it already. ■

If Toyota ever had the harebrained idea to slap a Lexus badge on a van, it'd look no further than the Vellfire Hybrid.



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We Say...



Frank Markus
TECHNOLOGUE

Mil-Spec Ute Battle-ready but needs a nickname



On August 26 our Army and Marine Corps selected a new SUV to (mostly) replace the lovable and by now iconic HMMWV. The great-grandson of Willie and Joe's original jeep will be the Oshkosh L-ATV (Light All-Terrain Vehicle), aka JLTV (Joint Light Tactical Vehicle) in U.S. mil-speak. It's a vastly different animal than the Humvee, and you probably shouldn't hold your breath for a civilian version.

Just as the typical HMMWV weighed more than twice the M151 jeep it replaced, so will the JLTV more than double a base Humvee's weight to about 7 tons. This is a reflection of the operating theaters in which these trucks will be used. Jeeps and Hummers were intended as tactical support vehicles driven behind the front lines, but these days instead of front lines we have IEDs and suicide bombers. Armoring Humvees for combat renders them less capable of tackling the extreme off-road tactical missions they were originally designed for. But the JLTV, designed from scratch for modern combat environments, has no such problems.

The Oshkosh engineers started with the fragile human occupants and layered protection outward. A blast-deflecting and -absorbing unitized central shell surrounds energy-absorbing seats and floor panels. Subframes attach in such a way as to direct

harm away from the occupants. Similarly, the TAK-4i intelligent independent suspension is designed to absorb off-road impacts like a



SCORE race truck, providing 20 inches of total travel. The JLTV is said to be able to traverse any course of ruts and bumps 70 percent faster than the Oshkosh Mine-Resistant Ambush Protected (MRAP) ATV, the next most-capable military truck, at equivalent comfort levels. Ride height is adjustable, allowing the JLTV to crouch into low-clearance amphibious transport vehicles. We presume the suspension employs oil and/or air springs, and we understand that central tire inflation is provided (suggesting it may use offset gear-reduction hubs like the Humvee), but further specifics remain under wraps while Lockheed-Martin contests the Pentagon's 55,000-vehicle contract awarded to Oshkosh. (Another rejected supplier, AM General, is not protesting the decision.) Stay tuned.

Power will come from a 6.6-liter GM

Duramax turbodiesel V-8 optimized for "dirty" JP8 fuel and peak fuel efficiency. Power gets routed through an Allison six-speed automatic to an Oshkosh two-speed transfer case. Top speed on-road is above 70 mph, the vehicle meets all FMVSS regulations for legal operation on public roads, and driving range is said to exceed the 300-mile requirement, but fuel tank size is still classified. Oshkosh also offers a ProPulse diesel-electric setup that supposedly improves fuel economy by 35 percent and allows the vehicle to export 30-70 kW of military-grade power. This frees up the space and weight an extra generator to power a command base would consume.

And while we're on the options list, the ultimate safety device is the one that removes the people from the truck altogether. Oshkosh's in-house autonomy system TerraMax uses automotive-grade sensors and expertise gleaned from successfully competing in all DARPA Challenge autonomous-driving events to provide platooning autonomy, remote-control operation, and even full self-sensing off-road autonomy. TerraMax and ProPulse are both fully developed and applicable to Oshkosh's entire lineup of military vehicles.

One look at that malevolent face, and you know civilians like the Governor are going to want one. There's nothing preventing a civilian version, but the JLTV's 7-ton curb weight (12-ton gross) means said civilian might need a commercial-vehicle license. They'll also need Rolls/Bentley cash—the military is spending just under \$400K each, battle-ready. But what will we nickname it? JellyTelly doesn't sound menacing enough. ■



MIDDLE OUT Oshkosh designed the JLTV with a mixed combat and tactical mission in mind. Its focus on occupant protection gives it superior survivability and off-road capability relative to up-armored Humvees and MRAP vehicles.

The JLTV is a vastly different animal than the Humvee.



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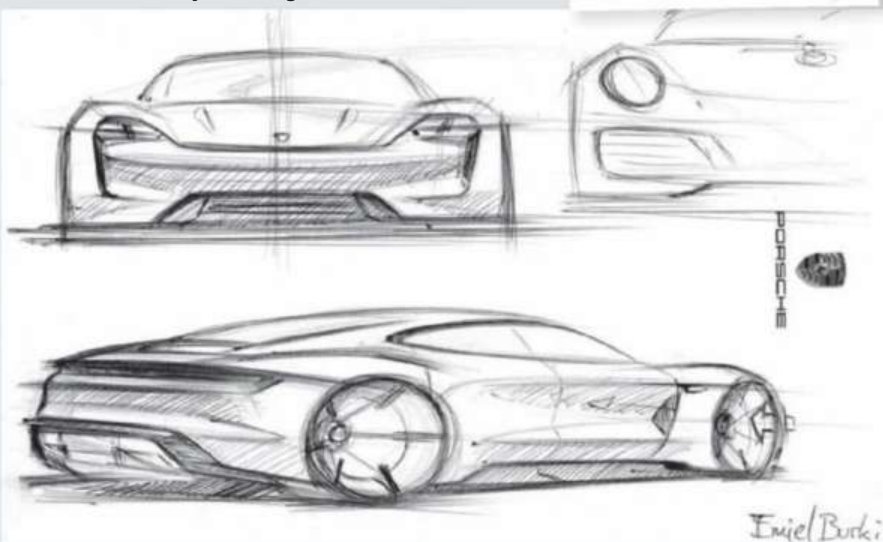
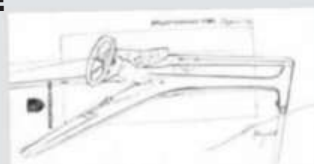


BACK OF THE NAPKIN

EMIEL BURKI & FELIX GODARD, PORSCHE

The Mission E concept debuted in Frankfurt with some lofty claims: more than 590 hp, 311 miles of range, and a 0-60 mph time around 3.5 seconds, all thanks to an 800-volt powertrain that can recharge the battery to 80 percent in 15 minutes. We can't confirm any of that, but we do know the Mission E showcases some truly slick design.

**Felix Godard,
Advanced Interior
Designer, Porsche**

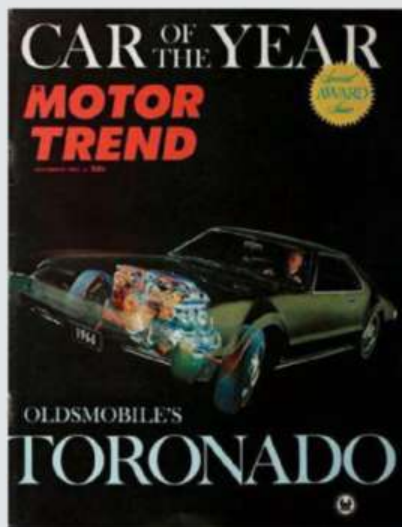


**Emiel Burki
Senior Exterior Designer, Porsche**

See page 20 for more about the Porsche Mission E concept.

From the *Motor Trend* Archive...

REARVIEW



50

DECEMBER 1965

PRICE: \$0.50

The December '65 issue was our biggest and most important of the year,

as in it we announced the front-wheel-drive Oldsmobile Toronado as our 1966 Car of the Year. The Toronado would wind up being the first and—unless the brand makes a surprising comeback—only Oldsmobile ever named Car of the Year.



30

DECEMBER 1985

PRICE: \$2.25

This wacky-looking Buick Wildcat concept was supposed to signal a shift for sports cars. It lacked doors, and instead drivers entered through a glass canopy that lifted up fighter-jet style.



10

DECEMBER 2005

PRICE: \$4.99

"It doesn't get better than this," we declared with the Ford GT, Dodge Viper, and a 505-hp Corvette Z06 gracing our cover. Ten years later, Corvettes and Vipers crack 600 hp and a new GT is on the way. It's safe to say it does.

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Johan de Nysschen



You've had the engineering capability, so why has it taken until now to build a world-class-handling Cadillac?

There's probably many factors at play. I would say it boils down to a renewed sense of focus and really beginning to answer that question of, "What does Cadillac as a brand stand for?" And if we want to be around for another 113 years, how do we evolve from a proud history and heritage of all that the brand has captured in the past yet make it relevant for a new world and a new audience and a new demographic of customers? I think, too, that while we mustn't ever contemplate emulating those who today dominate the luxury market—because if you follow others, you always follow—there is also a clear understanding that the luxury buyer today demands a great deal of product substance that comes not only from the craftsmanship and technology and fit and finish but also from the driving experience.

Do you see a day when you'll have to build two cars or two very different states of tune for Asia and Western markets?

There has already been some emergence of that. Everybody has long-wheelbase versions of their cars in that market in response to that. For me, while we are part of a titan car company, Cadillac must also earn its keep within the General Motors stable. That's our agreement. There will be strong investment in the brand, but we need to hit various brand-development milestones, and obviously included in those would be required returns to shareholders. And that also means that we need to be frugal with how we apply both capital and engineering resources. Given the reality that we've got many market segments that today remain very obvious gaps in our portfolio, we need to address those. I don't think we should be diluting our resources by creating two versions of the same car. So for Cadillac, this is not an option, and I would like to move away from that. We will produce global cars for global markets and one play.

Is the shareholder-return mandate what killed the CTS wagon?

There just simply are not enough people who will buy those cars to make the investment worthwhile. To an extent I'm also obviously

Interview

CEO, CADILLAC



[A mid-engine Corvette-based Cadillac] has to be one of the options."

a car enthusiast. That's why I'm in this business. I like the increased degree of driving engagement that a manual transmission brings, but the fact is that a modern automatic does better than a manual transmission in every factor that you can think of. Given the low volumes today, a manual transmission begins to be more costly in application in the car, and if it doesn't pay its way, you know, it's pretty hard to keep it around.

What about diesel versus hybrid?

This is an example of where you really don't have too much of a choice. You need to do both even though it may not make economic sense. We need zero-emissions capability in China just to be there, so that sort of forces

your hand in the first place. In the nearer term, given costs of the technology and the preferences of the European market, if you don't have diesel, you don't play. So it kind of pushes you into doing both. And besides that you need your normal sophisticated technology on gas engines for the other markets. So this is why I say that if I have to keep all of that alive, that's where I'll put the money.

Is a halo car based on the forthcoming mid-engine Corvette in the cards for Cadillac?

It has to be one of the options that we consider. In the future there are going to be some architectures inside the corporation that will remain purely Cadillac, but then there are others where it just isn't economically feasible to enter segments by trying to do a unique Cadillac. Then you look at what's available in terms of corporate assets. And I'm sure you'd agree that a new, very advanced Corvette platform wouldn't be a bad place to start. On the other hand, if we think about what could be a true halo car for Cadillac besides that, you could go in a completely different direction. Considering particularly our heritage, I could also imagine a very luxurious, very indulgent, very sophisticated four-door convertible being a good play that draws on our heritage. **Scott Burgess**

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READERS' THOUGHTS ON PAST ISSUES

Ballin'

In the September 2015 issue, your comparison test of a Mercedes-AMG GT S, Nissan GT-R, and Porsche 911 Turbo S estimates the front legroom of the Porsche as 66.7 inches ("Ride of the Valkyries"). Is this for the NBA special edition?

ART SAMUELSON
San Francisco, California

Somehow, the engineers who can rewrite the laws of physics to make a rear-engine car handle safely can't measure legroom. It's missing from Porsche's specs panels going back years.—Ed.

The Contrarians

[Spoiler alert] I simply cannot figure out what made you choose the Mercedes as the winner in your Mercedes vs. Nissan vs. Porsche comparison. Here is why you should've chosen the Nissan as the winner: The Porsche was tops in performance, handling, and braking, besting the Nissan by a mere 0.2 second from 0-60 mph and 0.2 second and 2.6 mph in the quarter mile. And although the Porsche bested the Nissan more handily in braking and performance, all of this came at an \$83K premium. The Mercedes bested the Nissan by slimmer margins in braking and handling but was bested by the Nissan in performance and commanded a nearly \$50K higher price. In terms of bang for the buck, the Nissan absolutely, positively dominates the competition.

Let's assume the author bought a Mercedes and I a Nissan, both identical to those tested. For what he paid, I can not only buy a car that can keep up with his but can also buy a very well-appointed Prius for \$30K and put the nearly \$20K I have left in my Roth IRA. He has a great car. But for the same amount of money, I have a great car, a loaded Prius to drive to work, and an extra \$20K in my retirement fund. Who won on that deal?

JAMES GREIDER II
Streator, Illinois

We're kind of disappointed a \$30K Prius is the second car in this scenario.—Ed.

In the intro of Frank Markus' column on NanoSteel ("Technologue," September 2015), he makes a comment I completely disagree with. He wants the government to raise gas taxes so as to reduce people's consumption. Keeping gas taxes low is one of the few things the U.S. government does right. Raising gas taxes, particularly in our current down economy, would be harmful to our overall prosperity, reducing users' travel (and the additional spending it entails). It would also

LETTER OF THE MONTH

Sweet Reality

I always enjoy a peek at the near future of the automotive world ("New Cars Buyer's Guide 2016-2017," September 2015). I have to sigh and wonder if truly exciting things are becoming the exception rather than the expected. I am referring to how mundane it has gotten when the "major" changes on a model amount to several (more) driver assist items rather than driver engage items. Also, my idea of a cool fact is not the Kia Cadenza's V-6 being shared with a crossover and a minivan. I challenge you to make that sound cool. Like bragging to the neighbor, "Yep, she may not look the part, but this baby's got the same mill as your wife's minivan under that hood. ..."

JOHN BLAIR
Wake Forest, North Carolina

You laugh now, but there might be more cachet to that humblebrag if all engines with more than four cylinders are pruned from automaker lineups.—Ed.

READERS ON LOCATION

LOOK AT THE BABY! Mother and neighbor to the north **Mary-Elizabeth Byers** and her 4-hour-old son share their experience with us: "We had received the most recent copy of *Motor Trend* in the mail the day before and made sure to pack it in our hospital bag," they penned. "My husband enjoyed reading *Motor Trend* articles to us while I was pregnant with our son and continues to read articles to him now." Fantastic.



most heavily impact lower-income folks who can least afford it.

I assume Mr. Markus believes reduced consumption is necessary because of limited oil reserves around the globe. This is not borne out by reality. Known oil reserves continue to grow as exploration and extraction technologies grow. It is now known, for instance, that the U.S. is sitting on greater reserves than Saudi Arabia, when including oil shale deposits. Fears over fracturing and

horizontal drilling come from unfounded hysteria promoted by environmental extremists who would frankly prefer we don't do any drilling at all. [A different debate for a different time.]—Ed.]

Bottom line is, the more the government stays out of our way, the greater our freedoms, the greater our energy production, and the greater the overall prosperity of our country. I see these as net positives, not negatives. Let's not hurt ourselves the way other countries hurt their citizens.

ROY PARRET
Yuma, Arizona

Markus replies: "My point is merely that IF the perceived societal goal is reduced fuel consumption (as our government asserts), then the far more effective approach is to reduce demand via higher fuel prices (see European consumption). Our current CAFE approach has been far less effective, as it simply drives buyers out of cars and into trucks and encourages commuting longer distances."—Ed.

Common Error

Porsche speedometers lie. Once upon a time, a man bought an expensive watch from a jeweler. The watch manufacturer advertised extensively about its quality. A few days later, the man noticed the watch gained one hour and 12 minutes every day. He took the watch to the jeweler for regulation. The technician told him that many purchasers of that watch were upset about this bad timekeeping. But the manufacturer would not let the jeweler adjust the watch to keep accurate time.

The watch manufacturer deliberately designed the watch to run fast. When the man contacted the manufacturer, the company said that there was no law that required them to make watches keep accurate time and the watch complied with industry standards. Your Porsche and mine are equipped with speedometers that deliberately overstate the speed of the car. Porsche will not adjust the software that interprets the linear relationship between the rotation speed of the driveshaft and the speedometer indication. Porsche deliberately manufactures the error into the system because the error is not linear.

We need to rise up and make Porsche correct our speedometers.

STEVEN PETERS
Evergreen, Colorado

All vehicle speedometers are inaccurate to varying degrees. Speedos should never read lower than the actual speed and are typically higher to prevent speeding.—Ed.



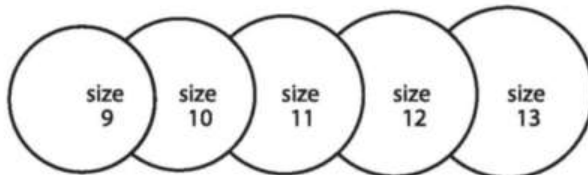
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YOU AGAIN

Words Christian Seabaugh
Photographs Julia LaPalme



READY TO RUMBLE

In this corner, with a 302-cu-in V-8 making 435 hp, hailing from Flat Rock, Michigan, is the 2016 Ford Mustang GT.



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THE CHALLENGER

Sporting a 376-cu-in V-8 producing 455 hp, the pride of Lansing, Michigan, is the all-new 2016 Camaro SS.

COMPARISON | 2016 Chevrolet Camaro SS VS. 2016 Ford Mustang GT



I'll never forget the first time a fourth-gen Camaro SS rolled up on me in my 2000 Mustang GT. It was late at night. The roads were clear. He revved. I revved. Adrenaline surged. The light turned green. The Camaro ripped away from the light. And I—a college kid just days into driving stick—got left in the dust.

Since the Chevrolet Camaro's introduction in 1966, it and the Ford Mustang have faced off at countless other stoplights—and in our pages more than 20 times. To say it's been contentious is an understatement. Mustang versus Camaro is among the greatest of rivalries. It's Celtics-Lakers, Rangers-Devils, Patriots-Everybody. The two sides have lots of history, and it ain't always friendly. Ford and Chevy have escalated the arms race, throwing more performance capability on the latest cars than ever before. Last year, the fifth-gen Camaro SS 1LE delivered an upset to the then-new Mustang GT Performance package. The Camaro's subjective and objective performance wowed us. With a new Camaro on the scene, the pressure's on Ford for revenge.

Not much separates our 2016 Ford Mustang GT Performance package from the last one we tested—even the Triple Yellow Tri-Coat paint is the same. The S550 Mustang is among the most potent and capable yet. Under its long, sleek hood is a Coyote 5.0-liter V-8 putting down 435 hp and 400 lb-ft of torque. Power is routed through a six-speed manual gearbox to the rear wheels, just as God intended. That's not all the artillery the Mustang brings to the fight. The Performance package adds six-piston front Brembo brakes, a Torsen limited-slip diff with a 3.73:1 rear

TIMELINE 1964

FORD MUSTANG The first Mustang made its debut to much fanfare at the 1964 World's Fair. This fastback model is a 1965.



1967

CHEVY CAMARO GM followed suit with a ponycar of its own in 1966. Like the Mustang, Camaro buyers had a choice of I-6 or V-8.



CANYON CARVERS It used to be that you wouldn't want to take a Camaro or Mustang on twisty roads. We're happy to say that those days are long gone.

It was late at night. The roads were clear. He revved. I revved. Adrenaline surged. The light turned green. And I got left in the dust.



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COMPARISON | 2016 Chevrolet Camaro SS VS. 2016 Ford Mustang GT

axle ratio, stiffer front springs, and 19-inch wheels wrapped in sticky Pirelli P Zero tires, among other items.

The changes to the Chevy are more extensive. Much smaller than before courtesy of the Cadillac ATS' Alpha platform and a diet, the sixth-generation Camaro is now the flyweight of the segment, weighing in at 3,672 pounds to the Mustang's 3,825. The Camaro's weight advantage is complemented by an edge in power, too; the Corvette's LT1 6.2-liter V-8 churns out 455 hp and 455 lb-ft of torque in this spec. As in the Mustang, power is routed out the back through a six-speed gearbox and to the ground with some sticky tires, Goodyear Eagle F1 Asymmetric 3s here.

I might've fared better back in college in my car's successor. True to its drag racing roots, launching the modern Mustang couldn't be easier. Ignore launch control (it'll just slow you down), rev the Coyote to 3,000 rpm, dump the clutch, and get ready to start shifting. Sixty mph happens in 4.6 seconds at the tippy top of second gear, and the quarter mile comes in 12.9 seconds at 110 mph even. Although that performance is phenomenal by my 2000 Mustang GT's standards, it's tough to compete with the Chevy's newfound power-to-weight advantage. Feathering the clutch off the line is the fastest way to 60 mph in the Chevy, hitting the mark in a staggering 4.0 seconds (0.4 second faster than a 2015 Camaro SS 1LE) and running down the strip in 12.4 seconds at 114.6 mph.

Only in the past generation have the Mustang and Camaro seen a keener focus on

1974

FORD MUSTANG Ford followed its success with the little-loved and decidedly dopey-looking Mustang II.



1970

CHEVY CAMARO This gen was significantly neutered compared to the big-block bad boy it was at its debut. (1974 shown.)



It's tough to compete with Chevy's power-to-weight advantage.



MOST IMPROVED The new Camaro's interior is far better than the version it replaces. Our favorite features are the leather-wrapped, flat-bottom steering wheel and the high-res tablet-style infotainment display.



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COMPARISON | 2016 Chevrolet Camaro SS VS. 2016 Ford Mustang GT

handling, and it shows on these ponycars. The Camaro is faster, rounding the figure eight in 24.1 seconds and averaging 0.85 g in the process. Doing so couldn't be easier. The Camaro's steering is quick and precise, the big Brembos allow you to dive into the corner late, and the broad gearing and mega torque curve mean you can do the whole lap in second gear. Traction control is unobtrusive, so there's no real need to turn it off. That said, if you leave it on, you're missing the whole point of having a ponycar. The Camaro is a wonderfully controllable drift machine with the nannies shut off, the tail easily gathered back up by minor throttle adjustments.

The Mustang isn't as quick, and getting good performance out of it is harder work. The Ford laps the figure eight in 24.4 seconds averaging 0.82 g, but it's hard to escape the fact that it shares much with the last Mustang. "Feels like an old Mustang," testing guru Kim Reynolds said. "Feels heavy. There's a lack of damping in the body motions with high pitch and roll rates." In English: You're bouncing around a lot. You're shifting a lot, too, just cresting into third as you enter the corner before shifting back down to second. We like rowing our own gears as much as the next guy or gal, but rushing through the gears in the Ford is frustrating. The gearbox is notchy and narrow; it doesn't like to be hurried. As for going around a corner slowly, say with the tires smoking and the tail hanging out, well, the Mustang will do it, but balancing the Ford there, I reckon, is as difficult as keeping a U-2 spy plane from stalling at the edge of space.

1979

FORD MUSTANG In the heyday of excess, the turbocharged I-4-powered Mustang SVO went against the grain. (1986 shown.)



1982

CHEVY CAMARO Five letters sum up the Camaro of the 1980s: IROC-Z. (1985 shown.)



The Mustang seems relaxed as it gallops ahead, humming at 2,000 rpm at 75 mph.



HOW IT'S DONE The Mustang is still the tops in the interior department. Ford's attention to detail, from the "Ground Speed" gauge to the satin metal plaque on the passenger-side dash, is tough to beat.

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COMPARISON | 2016 Chevrolet Camaro SS VS 2016 Ford Mustang GT

You're on the ragged edge, and if you're not careful, the rear end will quickly and without warning come around on you.

This Mustang isn't about the ragged edge, though. As the badge on the trunk says, it's a GT. At that it excels, and it starts inside. "It feels like Moray Callum and the team tried really hard," tweeter-in-chief Ed Loh said. "The soft-touch padded dash and door panels with contrast body-color stitching are nice touches." The optional Recaro buckets are appreciated, too—they're supportive, comfortable, and help give the driver a commanding view of the road. On the highway the Mustang seems relaxed as it gallops ahead. Humming at 2,000 rpm in sixth gear at 75 mph, the Ford has enough juice to pass slower traffic without shifting. The steering wheel stays on center, wind and road noise are well-managed, and the ride is remarkably comfortable. Cruising in the Mustang lets you appreciate the little things it offers, such as the aircraft-style switches, metal trim, and the new Sync 3 infotainment system. Combine all that with the Mustang's big trunk, and it isn't hard to imagine yourself cruising from New York to L.A. in the Ford.

The relaxed demeanor disappears when you start chucking the Mustang into corners.

1994

FORD MUSTANG The svelte-looking SN-95 Mustang was among the most popular ever, dominating the ponycar sales charts.



1993

CHEVY CAMARO This generation was thought to be the Camaro's last, as it went out of production in 2002. (1996 shown.)



BLACKTOP New for 2016, the black-painted roof really helps make the Mustang look longer, lower, and meaner.

V-6 Camaro Finds the Sweet Spot Lighter, Faster, and Better-Looking

FIRST TEST

Lots of contradicting stereotypes come with the Chevrolet Camaro. For example, how can an owner have a red neck and a mullet? That just doesn't make sense.

The 2016 Camaro does make sense, though. From LT to SS, Chevy has vastly improved the performance, interior, and the styling. It's cleaner, crisper, and much more nimble.

Sure, it's also undergone a well-publicized haircut. Its new Alpha platform, the same one used for the Cadillac ATS, is stiffer, smaller, and stronger than the outgoing Zeta. Forget the party in the back. This machine is all business.

The V-6 LT will likely be the sales workhorse for Camaro. Tucked between the entry-level 2.0-liter, turbocharged four-cylinder Camaro LT and 6.2-liter, direct-injection V-8 Camaro SS, the 1LT and 2LT provide the right combination of practicality and power at a price starting at \$26,695.

The all-new 3.6-liter, direct-injection V-6 creates 335 hp and 284 lb-ft of torque, a slight



increase from the outgoing V-6 that produced 323 hp and 278 lb-ft. It includes continuously variable valve timing and active fuel management.

Chevy says the LT can go 0-60 mph in 5.1 seconds, though our testing showed 5.3. Our quarter-mile time was also slightly slower than Chevy's official time of 13.5 seconds at 103 mph. We did it in 13.8 seconds at 102.9 mph.

I preferred the six-speed manual to the eight-speed automatic in the V-6 Camaro. The manual let me hold gears longer and better manage the torque out of the engine during test drives of both vehicles around Hell, Michigan. The

eight-speed automatic tended to upshift too fast, even when driving in the selectable Sport mode.

The ride was surprisingly quiet and smooth, though you could still blast the active exhaust to create a louder ride. In fact, Camaro engineers had to go back and make the Camaro louder after initial testing. Now noise is piped into the cabin from the engine bay via a mechanical sound enhancer. (You can adjust the resonators.)

The steering is crisp and well-weighted with just a touch of understeer around fast corners. The tail teases that it might come out, but it never does. Best of all, the new platform has allowed Chevy engineers to vastly improve the visibility out from the cabin. The view inside is pretty good, too, with a much more refined interior.

Motor Trend scales confirmed that the Camaro stuck to its diet, weighing in at 3,461 pounds, nearly 300 pounds lighter than the 2015 model.

Every change to the sixth-gen Camaro makes it better. It may not look significantly overhauled at first glance, but it's definitely all business.

Scott Burgess

2016 Chevrolet Camaro RS Base Price \$28,600 (est) **Price as Tested** \$32,500 (est) **Vehicle Layout** Front-engine, RWD, 4-pass, 2-door coupe **Engine** 3.6L/335-hp*/284-lb-ft* DOHC 24-valve V-6 **Transmission** 8-speed automatic **Curb Weight (F/R Dist)** 3,461 lb (52/48%) **Wheelbase** 110.7 in **L x W x H** 188.3 x 74.7 x 53.1 in **0-60 MPH** 5.3 sec **Quarter Mile** 13.8 sec @ 102.9 mph **Braking, 60-0 MPH** 118 ft **Lateral Acceleration** 0.92 g (avg) **Figure Eight** 25.5 sec @ 0.74 g (avg) **EPA City/Hwy/Comb Fuel Econ** 17/26/20 mpg (est) **Energy Cons, City/Hwy** 198/130 kW-hrs/100 miles (est) **CO2 Emissions, Comb** 0.96 lb/mile (est) *SAE Certified



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COMPARISON

Driving hard and fast down country roads requires a fair amount of work. The pitching, rolling, diving, and surging that revealed themselves on the figure eight are amplified as you bounce down poorly maintained public roads, and although steering feedback itself is fine, actual feel is a bit wooden. It's not all bad, though; that Coyote motor sounds great as it revs out. The close gear ratios give the impression of speed and ensure that you'll get to hear all of the V-8's bark as you roll through the rev range.

The Camaro, true to the Super Sport badge it proudly wears on its rump, is more back-road-oriented than the Ford. The Camaro loves being driven hard and fast down straights before getting chucked through tight corners. Feedback through the small flat-bottom steering wheel is exceptional, and the gearbox feels much like the current Corvette's, minus the seventh gear. The Camaro SS is the car the Cadillac ATS-V should've been. Loh was a big fan of the Chevy's engine note on our back road loops. "The Camaro is more my speed," he said. "It's freer-revving with a higher pitch that makes me think race car. The Camaro hits nearly 80 mph in second gear and is screaming as it nears the limiter. The Mustang takes an extra gear to get there, which Christian says makes it feel faster—even though it's not."

The Chevy feels a bit rougher going down the highway. Wind and road noise are higher,

2005

FORD MUSTANG The retro-inspired fifth-gen Mustang was well-received and would again inspire its rival to enter the segment.



2010

CHEVY CAMARO After starring in "Transformers," a retro Camaro finally hit the streets ready for battle again in 2009.



and the ride is ever so slightly less compliant. Visibility, a major complaint about the last Camaro, remains a bit of an issue. You sit high up in the Ford, but in the Camaro you are still down low with high sills and visibility limited by a too-tall gauge pod. "It's better than in the previous-gen but still not as reassuring as the Mustang," Loh said. "But hey, it does make the SS more badass-feeling, which is what people want in a ponycar."



Visibility aside, the new Camaro's interior is a huge improvement on the outgoing model. Although there's less going on in here than in the Mustang, the bits you spend most of your time touching, chiefly the steering wheel and shifter, all have a nice high-quality feel to them. The simplified center stack also lends to the premium feel of the Chevy. I really liked the canted high-res infotainment screen, which is well-placed and easy to use and incorporates Apple CarPlay. Loh really dug the large A/C vents. "They not only look like jet engines, but the knurled metallic ring on each adjusts temperature and fan speed. Hidden in plain sight yet intuitive."

Picking a winner between these two great ponycars is less intuitive. "They're close enough that preferences of ergonomics,

We want the car with the ponycar spirit, the one that makes adrenaline surge.



1ST PLACE

2016 Chevrolet Camaro SS

Superior performance at the strip and in the corners makes this the muscle car we want.

visibility, and engine noise could easily put one ahead of the other," Loh said. "But when it comes to at-the-limit performance, the Camaro simply out-handles the Mustang. As it says on their badges, the SS is a super sports car, and the Mustang excels as a grand touring car."

The Ford Mustang GT is pure class—the Yankees in their pinstripes. Yeah, it can hustle through the corners if it has to, but it's far happier cruising between stoplights or on the open highway, and you'll be far happier doing the same.

The Camaro SS, on the other hand, is the 2004 Red Sox: beards, brawn, and a bloody sock. You wanna smoke that expensive sport sedan at the stoplight? Want to drift around the corner onto your street? Want people to turn their heads as you roll up onto the scene? The Camaro SS is your guy.

As for us, well, Loh sums it up. "In terms of which is more impressive, which one I'd use to shock my friends or go supercar hunting on a lark, it's the Camaro," he said. "It's faster, and sharper-handling, yet has a more sophisticated, sinister swagger. The Mustang growls. The Camaro howls."

We want the car that best embodies the ponycar spirit. We want the car that can go the fastest, turn the hardest, be the loudest, and look the baddest. We want the Chevy Camaro that makes our adrenaline surge and leaves stoplight competition in your rearview. If it just so happens to be great out on the open road, well, that's the icing on the dust-covered cake. ■



2ND PLACE 2016 Ford Mustang GT Performance package

The one we'd pick in a heartbeat to drive across the U.S.A.

2016 Chevrolet Camaro SS	POWERTRAIN/CHASSIS	2016 Ford Mustang GT (Perf Pack)
Front-engine, RWD	DRIVETRAIN LAYOUT	Front-engine, RWD
90-deg V-8, alum block/heads	ENGINE TYPE	90-deg V-8, alum block/heads
OHV, 2 valves/cyl	VALVETRAIN	DOHC, 4 valves/cyl
376.1 cu in/6,162cc	DISPLACEMENT	302.1 cu in/4,951cc
11.5:1	COMPRESSION RATIO	11.0:1
455 hp @ 6,000 rpm*	POWER (SAE NET)	435 hp @ 6,500 rpm
455 lb-ft @ 4,400 rpm*	TORQUE (SAE NET)	400 lb-ft @ 4,250 rpm
6,500 rpm	REDLINE	6,500 rpm
8.1 lb/hp	WEIGHT TO POWER	8.8 lb/hp
6-speed manual	TRANSMISSION	6-speed manual
3.73:1/1.87:1	AXLE/FINAL-DRIVE RATIO	3.73:1/2.43:1
Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar	SUSPENSION, FRONT: REAR	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar
15.8:1	STEERING RATIO	16.0:1
2.3	TURNS LOCK-TO-LOCK	2.7
13.6-in vented disc; 13.3-in vented disc, ABS	BRAKES, F: R	15.0-in vented disc; 13.0-in vented disc, ABS
8.5 x 20-in; 9.5 x 20-in, cast aluminum	WHEELS, F: R	9.0 x 19-in; 9.5 x 19-in, cast aluminum
245/40R20 95Y; 275/35R20 98Y Goodyear Eagle F1 Asymmetric 3	TIRES, F: R	255/40R19 96Y; 275/40R19 101Y Pirelli P Zero
	DIMENSIONS	
110.7 in	WHEELBASE	107.1 in
63.0/62.9 in	TRACK, F/R	62.3/64.9 in
188.3 x 74.7 x 53.1 in	LENGTH X WIDTH X HEIGHT	188.3 x 75.4 x 54.4 in
38.4 ft	TURNING CIRCLE	40.0 ft
3,672 lb	CURB WEIGHT	3,825 lb
54/46%	WEIGHT DIST, F/R	54/46%
4	SEATING CAPACITY	4
38.5/35.0 (est) in	HEADROOM, F/R	37.6/34.8 in
44.3/29.9 in	LEGROOM, F/R	44.5/30.6 in
55.0/50.4 in	SHOULDER ROOM, F/R	56.3/52.2 in
9.0 cu ft (est)	CARGO VOLUME	13.5 cu ft
	TEST DATA	
	ACCELERATION TO MPH	
1.7 sec	0-30	1.7 sec
2.4	0-40	2.4
3.1	0-50	3.4
4.0	0-60	4.6
5.0	0-70	5.8
6.3	0-80	7.1
7.7	0-90	8.9
9.3	0-100	10.8
11.4	0-110	12.9
1.8	PASSING, 45-65 MPH	2.2
12.4 sec @ 114.6 mph	QUARTER MILE	12.9 sec @ 110.0 mph
104 ft	BRAKING, 60-0 MPH	109 ft
1.00 g (avg)	LATERAL ACCELERATION	0.96 g (avg)
24.1 sec @ 0.85 g (avg)	MT FIGURE EIGHT	24.4 sec @ 0.82 g (avg)
1,400 rpm	TOP-GEAR REVS @ 60 MPH	1,700 rpm
	CONSUMER INFO	
\$37,295	BASE PRICE	\$35,695
\$38,600 (est)	PRICE AS TESTED	\$47,350
Yes/yes	STABILITY/TRACTION CONTROL	Yes/yes
Dual front, front side, f/r curtain, front knee	AIRBAGS	Dual front, front side, f/r curtain, front knee
3 yrs/36,000 miles	BASIC WARRANTY	3 yrs/36,000 miles
5 yrs/100,000 miles	POWERTRAIN WARRANTY	5 yrs/60,000 miles
5 yrs/100,000 miles	ROADSIDE ASSISTANCE	5 yrs/60,000 miles
19.0 gal	FUEL CAPACITY	16.0 gal
14/26/18 mpg (est)	EPA CITY/HWY/COMB ECON	15/25/19 mpg
241/130 kW-hrs/100 miles (est)	ENERGY CONS, CITY/HWY	225/135 kW-hrs/100 miles
1.10 lb/mile (est)	CO2 EMISSIONS, COMB	1.06 lb/mile
Unleaded premium	RECOMMENDED FUEL	Unleaded premium



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Pilot Elite shown. © 2015 American Honda Motor Co., Inc.



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GUIDED BY PRINCIPLE. POWERED BY VOODOO.



Words Chris Walton **Photographs** Robert Guio

THE GT350R IS WORTH THE WAIT AND THEN SOME

 The mandate went something like this: "Starting with the Coyote, make a naturally aspirated V-8 that produces at least 500 horsepower and revs to 8,000 rpm. Figure out how to make a Mustang go around the Nürburgring like a Porsche 911 GT3. If anything doesn't make the car faster around a road course, leave it off and come up with a better idea. Nothing is out of the question." In three years, those orders were met or exceeded, and the result is the

game-changing 2016 Ford Shelby GT350R Mustang. Ford Performance is pleased, and it has every right to be. This is a real sports car and a damn great one at that.

The new 5.2-liter powerhouse is aptly named Voodoo. It's the first production flat-plane crank V-8 Ford has built, its connecting rods at 180-degree intervals rather than the customary 90 to allow it to breathe and rev more. Voodoo is also the highest-output naturally aspirated engine Ford has ever built—526 horsepower and 429 lb-ft of twisting force. Ferrari builds smaller

V-8s like this but uses a different firing order that makes them shriek rather than rumble. Voodoo has some of that, too, but there's still a lumpiness to the glorious noise it makes. When the baffles open wide for that distinctive eight-part staccato chorus, it takes your breath away. Because it revs to 8,250 rpm, the aria seems to go on without end. What's more, it's buttery smooth from bottom to top. A tall-gear roll-on reveals power building steadily until about 3,000 rpm, where it really hits its stride and things get interesting with more than 5,000 revs left on the tach.



PRECISION Ford's naturally aspirated V-8 is unlike anything you've ever heard or felt.

The 3,650-pound GT350R should reach 60 in 3.8 seconds—in second gear, which takes it to 75 mph—and finish the quarter mile in about 12 seconds at 120 mph. And as any good Mustang should, it will do ludicrous burn-outs, especially with the line-lock feature, but we've yet to try its dedicated launch control and dragstrip settings. The latter softens the rear suspension for an optimal rear-biased launch stance then snugs everything down for both upshifts. Is that cheating?

Our expectations of the GT350R, billed as the "most race-ready road-legal Mustang ever," being drivable any place other than a track were about as high as its low-profile tires, so our drive from Mazda Raceway Laguna Seca to Big Sur was a revelation. We couldn't stop repeating, "This is a real car." The clutch is as light and linear as a Honda's, its newly modified Tremec TR-3160 shifter could be right out of a new MX-5 Miata, and the engine is a velvety sweetheart.



The GT350R might be the best sports coupe we've driven.

At one point I covered the tach and asked my passenger to guess the rpm. He said 3,000. I pulled my hand away to show it was spinning at 5,000 rpm in second gear. So it's smooth, but what about torque? While making a hasty three-point turn, I selected third gear rather than first. From a dead stop, the car just did it.

Because the GT350R comes standard with third-gen magnetorheological dampers that

can self-adjust in 7 milliseconds at each corner, cringe-inducing potholes or pavement transitions that would ordinarily upset or even damage a track car were textbook one-and-done events. The standard carbon-fiber wheels, the first on a mass-production car, also play a large part in making it ride remarkably well. Each one removes 15 pounds of unsprung weight and reduces rotational inertia by 40 percent to allow the suspension to work that much better.

The steering wheel is just a little reluctant or sticky on center. Once the meaty Michelin Pilot Sport Cup 2 tires are loaded and turning, however, the feel goes back to a linear, predictable weight with precision now common for electric-assisted steering. There's also an occasional tendency for tire nibble on irregularities running parallel to the road, but it's hardly the stuff of race cars.

With such a broad rev range and enough low-rpm torque, some drivers relegated themselves to a top speed of 104 mph by leaving it in third gear for the entire track. But those comfortable with more speed grabbed fourth (good for 135 mph) for the



front straight and the run up the hill before the Corkscrew. Standard oil, transmission, and differential coolers keep the heat down, and a functional front splitter, carbon-fiber rear wing, underbody belly pans with a real diffuser, and side skirts are said to produce twice the downforce of a Porsche 911 GT3. Corners can be taken 10-15 mph faster in an R than in a base GT350 with the Track package, which we also drove. Part of it goes to the GT350R's aero stability, and part was undoubtedly down to those wonder wheels and tires. The GT350R is only 120ish pounds lighter but feels nimbler and more eager everywhere. Invest in carbon-fiber wheel companies. They're going to be on everything soon.

You can't simply put the GT350R's wheels on a non-R base car and expect it to perform the same, though. Besides different suspension tuning, the ABS and electronic stability control programs are tailored for the lighter wheels with stickier tires.

Finally, the 15.5-inch two-piece front brakes with Brembo six-piston calipers (15.0 rears with four pistons) were strong performers, never harrowing or showing signs of fade.

All of these things that make the GT350R such a dexterous, capable, and precise track car also make it an uncommonly good road car. Sure, the "make it faster or leave it off" mandate might discourage some, but it led to the creation of what just might be the best sports coupe we've ever driven.

It really is that good. ■



2016 Ford Shelby GT350R Mustang

BASE PRICE	\$63,495
VEHICLE LAYOUT	Front-engine, RWD, 2-pass, 2-door coupe
ENGINE	5.2L/526-hp/429-lb-ft DOHC 32-valve V-8
TRANSMISSION	6-speed manual
CURB WEIGHT	3,650 lb (mfr)
WHEELBASE	107.1 in
L X W X H	189.7 x 75.9 x 53.6 in
0-60 MPH	3.8 sec (MT est)
EPA CITY/HWY/COMB FUEL ECON	14/21/16 mpg
ENERGY CONSUMPTION, CITY/HWY	241/160 kW-hrs/100 miles
CO2 EMISSIONS, COMB	1.18 lb/mile
ON SALE IN U.S.	Currently

NO FRILLS Ford eliminates everything that doesn't make the GT350R go faster, including the radio and air-conditioning. If comfort is your main concern, you can add them back for \$3,000. Or just buy a different car.



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Words Benson Kong
Photographs Robin Trajano

CIVIC

DISOBEDIENCE





BLOODLINE All Civics owe their existence to the 139.8-inch-long hatchback with then-unimaginable amounts of interior space.



The Honda Civic, now more than 40 years young and coming into its 10th generation, has never been as challenged as it has been recently. Honda, the great purveyor of Compound Vortex Controlled Combustion (CVCC) technology during the industry's darkest disco days, gradually developed into the pinnacle of economical and reliable

transportation for the masses.

Early Civics offered modest conveyance with a dash of enthusiast zest that most competitors wouldn't bother with. But the compact car deck has become stacked in the past half-decade—coinciding with a down period for the Civic—as newer and shinier C-segment sedans with impressive features and driving zeal have drawn our attention.

No more, says Honda. Following an undistinguished ninth generation, the Civic is out to show that it may be over 40, but it's still got it. The 2016 model's platform is all-new, lengthening the wheelbase 1.2 inches while chasing more sporting flair without totally losing everyday comfort. Two new inline-four engines targeting more than 40 mpg highway are available, and one

AN ORIGINAL RABBLE-ROUSER RETURNS TO FORM





The turbo's oomph and broad powerband are most welcome.

owns a turbocharger—a first for the Honda brand in the U.S. Then there's the styling. Traditionally, the Civic's bodywork tends to lean toward clean and understated. Love it or hate it, the 2016 Civic's redesigned exterior looks to rouse the rabble, some of its elements (such as the front chrome bar) seemingly inspired by the hydrogen fuel-cell FCX Clarity. The basic idea Honda transmits is this: You could spend around \$20,000 on our economy sedan rather than the other guy's, and you'd also get to show

off the Civic's C-shaped taillights with integrated LED light bars, especially at night.

Generation 10's design is the most eccentric since the 2002-2005 EP3 Si sat on dealer lots, yet the base 2016 sedans pack as much punch as that former hot hatch. The 1.5-liter, turbocharged inline-four possesses a healthy 174 horsepower and 162 lb-ft of torque with a peak boost pressure rating of 16.5 psi. Armed with a continuously variable automatic (the only transmission choice with the turbo) the engine slings a preproduction, top-of-the-line Touring sedan from 0 to 60 mph in a relatively quick 7.2 seconds and through the quarter mile in 15.5 seconds

at 92.4 mph, faster than the EP3 Si.

We also had a chance to straight-line test the price-leading LX model with the also-new 2.0-liter, naturally aspirated four-cylinder with 158 hp and 138 lb-ft and a six-speed manual transmission, and it demonstrated it's no slouch. A well-timed launch and minimal weight (2,744 pounds for the LX) led to a 0-60 time of 7.8 seconds and a quarter mile of 15.9 seconds at 88.0 mph. But we'll reserve the 2.0-liter's final judgment until we can sample it with the CVT in either LX or EX guise. The signs look good enough, though, considering the last Civic EX (2,802 pounds) with the old 143-hp,



THOUGHTFUL There's a hidden storage pocket beneath the center console, like in the HR-V. Note the lack of a volume-control knob—a deal-breaker for some. (Touring model shown.)

PERKS Only the Touring trim (far left) comes with full LED headlights, which make a world of difference on dark roads relative to its halogen counterpart.



2016 Honda Civic Touring

BASE PRICE	\$28,000 (est)
PRICE AS TESTED	\$28,000 (est)
VEHICLE LAYOUT	Front-engine, FWD, 5-pass, 4-door sedan
ENGINE	1.5L/174-hp/162-lb-ft turbocharged DOHC 16-valve I-4
TRANSMISSION	Cont. variable auto
CURB WEIGHT (F/R DIST)	2,925 lb (61/39%)
WHEELBASE	106.3 in
L X W X H	182.3 x 70.8 x 55.7 in
0-60 MPH	7.2 sec
QUARTER MILE	15.5 sec @ 92.4 mph
BRAKING, 60-0 MPH	123 ft
LATERAL ACCELERATION	0.83 g (avg)
MT FIGURE EIGHT	27.5 sec @ 0.62 g (avg)
EPA CITY/HWY/COMB FUEL ECON	Not yet rated



129-lb-ft, 1.8-liter, and CVT combination we tested took 9.0 seconds.

Remarkably, the presence of the DOHC 2.0-liter and turbo 1.5-liter signifies the first time in Civic history that no single-cam layout is available. The turbo's oomph and broad powerband are most welcome in the 2,925-pound Touring sedan, which musters a figure-eight time of 27.5 seconds (Mazda3 territory). The car could be quicker if the CVT acted with more urgency, as there's a noticeable delay in acceleration when we transition from cornering to applying full power. (The transmission works fine in general use.)

Dynamically, it's easy to recognize Honda's signature sense of lightness and delicacy in the steering and body motions. Steering wheel turns lock-to-lock have been shortened from 2.8 to 2.2 to make the car feel livelier, and variable steering ratios were affixed to minimize the impact on the turning circle, which grows only slightly from 35.4 to 35.7 feet. The steering effort has a smidge greater heft than before but is still pretty light overall.

The Civic Touring comes with modern safety tech (forward collision warning, road departure mitigation, etc.), thicker anti-roll

bars, and chrome outside door handles, but the new parking brake could be the item of most interest. An electronic switch is standard, and we'll predict the hand lever's removal will become one of the topics virtuous Civic owners discuss at length, alongside two-tier dashboards, plummeting redlines, and the abolition of front control-arm suspension. The sloping roofline affects passenger entry into the rear, and it's visually hard to believe there's more back-seat space as the official specs attest. You do seem to sit deeper into the rear bench, so friend and family ride-alongs should be fine as long as they're not terribly tall and won't bump their heads getting in and out.

During the ninth generation's early days, it looked like Honda might be content to let the Civic scrape by on nameplate equity. But this latest effort—longer, wider, lower, and with wilder, more distinctive styling—goes a long way toward reasserting Honda cares about the always-popular Civic. The competition might have been thrilled with the thought of Honda apathy, but it's quite clear now the Civic won't concede its four decades of sales dominance without a fight. ■



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A few years ago I was coerced into doing an early-bird kickoff presentation for the annual SAE Hybrid and EV Symposium I attend every year. I'd always ducked these, but my pal Dennis Simanaitis (who had been doing them for years and years) rattled me out as a freeloader journalist, so when an email appeared from the organizers, I knew my goose was cooked.

Picking a subject was easy; the first-gen Chevrolet Volt had recently won *Motor Trend's* Car of the Year award. However, there was zilch my audience of EV engineers didn't already know about it, so I decided to read them the letters and emails the magazine had received in response.

Up on the stage, the first one appeared on the big screen behind me. It read, "Dear



Motor Trend: F___ You!" The profanity was blurred out, but a chuckle rippled across the hall. But what I said next silenced them. "Of all the responses we received, none was positive. Not a single one."

And five years after its introduction, I'm still routinely asked how far it'll go as an EV. "Officially, 38 miles," I answer. "And then you're stuck?!" they frown. "No, the engine starts, and it keeps going." I can see they didn't

know that. Between wary enthusiasts and a stubbornly confused public, it's just the sort of brilliant car that Detroit routinely neglects into oblivion when things get complicated.

Which is precisely—and emphatically—what makes the new Volt so extraordinary. Instead of shrugging its shoulders and moving on, GM is swinging not for the fences this time, but the parking lot beyond that. While eating dessert following our media drive of the car from San Jose, California, to Monterey and back, I asked the Volt's engineers if they could name a more complex powertrain. They couldn't.

Volt 2's gas engine is all-new and bigger—1.5 liters (from 1.4) and now aluminum, with direct-injection, more widely variable cam timing, and added hp (101 vs. 84). Its twin electric motors are closer in power but



EVEN SMARTER

Literally every single component beneath the Volt's "engine" shroud has been rethought. For instance, the ubiquitous heavy orange power cables are now jettisoned to save weight. Some bits are due to eventually appear in the future all-EV Bolt.



The new Volt seems poured through a nerd filter, slinkier and matured.

REVOLUTION²

SWINGING BEYOND THE FENCES



Words Kim Reynolds
Photographs Julia LaPalme



combine for less oomph than the original Volt's, but they can be connected in myriad ways via two (instead of one) planetary gearsets and a trio of clutches. Now the two motors can combine their grunt off the line, sometimes they can negotiate which better handles the chores—one can be a generator, or sometimes both can slumber while the engine directly locks into an efficient one-gear ratio relationship with the wheels.

Drivetrain weight drops 130 pounds by integrating the electrical power control into the motor casing (jettisoning those thick orange cables) and shrinking the motors. (The cost of the second planetary unit is negligible—GM pops them out like Campbell's makes soup cans.) The smaller of the motors is now a cheaper ferrite type, and the other's remaining rare earths are more efficiently concentrated. Upstream, the architecture of LG Chem's T-shaped battery stays, but its chemistry is lab-latest, there are fewer packs (192 from 288), its electrical energy rises from 17.1 to 18.4

kilowatt-hours—and yet the whole thing is 21 pounds lighter.

When GM, EDS, and Hughes Electronics created OnStar in 1995, nobody could have imagined how it would someday rewrite the Volt 2's powertrain architecture. With their owner's opt-in, OnStar has been monitoring Volt owners' behavior and found that although 80 percent of their drives were completely in EV mode, they wanted more. The car's 38-mile EV range was cool, but they wanted farther. The car's combined 37 EPA mpg was good, but they wanted better. GM

delivered. With an EV range of 53 miles (which can be used when you choose), it's predicted that the engine's crankshaft won't spin during 90 percent of trips, and combined with better gas-mode mileage (42 combined on regular-grade gas) its range stretches to a diesel-like 430 miles. Imagine how cars might evolve if they were all so fine-tuned to their driver's needs? All this, and \$1,200 cheaper, too.

TEST DAY

You can read my sad tale of a test day gone wrong over at Motortrend.com, but the craziness upshifted while attempting to recharge near Auto Club Speedway and were already hours behind schedule. When we got there, the station—ugh, only a single Level 2 connector—was already umbilicated, ironically, to an abandoned first-gen Volt. We'd need another one, but it was a good chance to door-handle-to-door-handle compare them.

Remember when the original Volt looked edgy? Here, Volt 1 suddenly seemed like a giant



CAR PLAYER The Volt's new interior is far easier to interface with. Behind the steering wheel spokes are regen paddles, and yes, that's Apple CarPlay on the center display.



WIND CHEATER The Volt's rear view definitely hints at Honda. Despite the deletion of its slit window between the taillights, rear vision is still adequate. Its back seat now fits three—barely.

electronics project box I might buy at Fry's Electronics. A design you could precisely date to the high hopes dawn of the modern electric car, five long years ago. In comparison, the new one seems poured through a nerd filter, slinkier but acknowledging that we've matured beyond the smack-'em-between-the-eyes electric car look. And sure, I see the Honda references in its stern, too—frankly, the whole car could pass as the world's all-time best-looking Civic.

At the next station, I climbed around the interior while attempting to wait out the battery's 4.5-hour charge time. The twin 8-inch displays have bright eye-candy resolution, the center stack controls are now for real-life, fumbly humans, and my first brush with Apple CarPlay makes it thumpingly clear that the first car company to cede its whole dash to Cupertino is going to rule the galaxy. In back, I folded myself into the new, temporary middle-seat perch that requires straddling the battery

but expands the car into quasi five-seater territory. Its biggest plus is the continuous seat back. Volt 1's double rear buckets invited stuff to topple through the gap.

As the sun set we finally rolled the Volt onto the scales: 3,543 pounds, 224 sliced from the last one we tested. Road test editor Chris Walton disappeared to the dragstrip and returned with a mild smile; 7.6 seconds to 60. A stomping 1.2 seconds quicker than the first Volt. Wow.

We rearranged the test equipment, and I set off to run the figure-eight test. Bending into a corner, I blurted, "Um, golly, this is a really fun," to—well, OnStar, if she was listening. The nose bites sideways with genuine corner hunger, and the steering effort is slightly heavy—but I like that. I squeezed the Regen on Demand paddles behind the steering wheel to whoa down the car with my fingers. Cool. The car moves as a coherent whole, balanced, responsive,

reminding me of how suited a properly integrated electric drivetrain is for serious driving (see: every story written about Tesla). Its 120-foot emergency stopping distance is so-so, but the brakes feel vastly better than the soupy pedal marring the current car.

Where the original Volt heaved heavily over road undulations and its engine sometimes redlined in generating frenzy, now its battery weight telegraphs solid, road-quieting ride motions, and this less-stressed engine is both quieter and too smart to get painted into an awkward operational corner like that.

This isn't just another Volt or a better one (one less likely to incite profane letters). Or one to kind of ignore because we've been there, done that, and the i3 and Mirai seem more technically *au courant*.

This Chevy Volt is a whole new deal, a revolution again. ■



2016 Chevrolet Volt	
BASE PRICE	\$33,995
PRICE AS TESTED	\$39,065
VEHICLE LAYOUT	Front-engine, FWD, 5-pass, 4-door hatchback
POWERTRAIN	149-hp/294-lb-ft AC electric motors plus 1.5L/101-hp /103-lb-ft Atkinson-cycle DOHC 16-valve I-4
TRANSMISSION	Cont. variable auto
CURB WEIGHT (F/R DIST)	3,543 lb (60/40%)
WHEELBASE	106.1 in
L X W X H	180.4 x 71.2 x 56.4 in
0-60 MPH	7.6 sec
QUARTER MILE	15.9 sec @ 84.1 mph
BRAKING, 60-0 MPH	120 ft
LATERAL ACCELERATION	0.82 g (avg)
MT FIGURE EIGHT	27.4 sec @ 0.63 g (avg)
EPA CITY/HWY/COMB FUEL ECON	113/99/106 mpg-e*; 43/42/42 mpg**
ENERGY CONS, CITY/HWY	29/34*; 78/80** kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.46 lb/mile**
EPA EV RANGE	53 miles

*Charge-depleting mode **Charge-sustaining mode

TWO FOR THE



Words Benson Kong
Photographs Robin Trajano



(OFF) ROAD



DECALS, DIRT, AND A DAY IN THE VALLEY



"Transmission temp warning," associate road test editor Nate Martinez hollers out the driver-side window. "Probably the left-foot braking."

He's at the helm of a 2015 Toyota Tundra TRD Pro on a mild summer morning, not much warmer than 80 degrees, and we're at the Hungry Valley State Vehicular Recreation Area just north of Los Angeles for some midweek wheeling. We'd rather not deal with truck trouble right now.

The electronic warning indicator might be the single most vexing (albeit informative) automotive invention of all time. Not that it's new or anything—its existence predates World War II—but the lovingly christened and begrudgingly tolerated "idiot light" can be equal parts empowering and frustrating. Especially when you're trying to have a good time in an off-road truck.

Ah, the off-road pickup. The niche's profile has really been elevated over the past half-decade even if sub-brands such as Pro-4X, FX4,



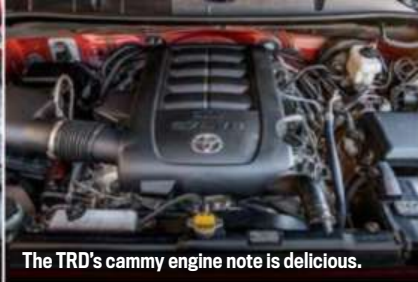
HIDDEN IN PLAIN SIGHT In addition to the tire tread pattern stamped into the seats, the Rebel's rear bench can flip up to deploy a flat load floor, providing plenty of utility when you're not going off-road.



Any automaker can create an off-road facade. We want to know which truck plays best in its natural habitat.



Ram's Hemi V-8 can pair with 3.92:1 or 3.21:1 gears.



The TRD's cammy engine note is delicious.

and Z71 have propped the field up longer. Ford's F-150 SVT Raptor went on sale in 2009, and suddenly it seemed everyone wanted to be an off-road enthusiast. The Raptor was a flared-fender sight to behold, more accessible and generally easier to justify to a spouse than a heavy-duty Ram Power Wagon.

Naturally, every owner survey and OEM market research slideshow we've seen concedes a different reality. By and large, truck buyers don't care about off-roading. Or the off-roading occurs so infrequently it'd make you question the whole business of selling off-road trucks ... but think of how cool you'd look behind the wheel! To those who actually use their off-road trucks off-road, our plaudits, but optics go a long way in selling anything. We realize consumers want to look good, but we as enthusiasts want to ensure there's substance behind the facade. Any automaker can create an off-road package with graphics and shocks. We want to know which truck plays best in its supposed natural habitat.

For the princely sum of \$10 in gate fees, the Tundra and a 2015 Ram 1500 Rebel 4x4 Hemi have gained admission to Hungry Valley. Five dollars a pop is a drop in the bucket compared to the two trucks' MSRPs. The new Rebel, the most off-road-oriented

Ram 1500 model on offer since the previous-generation, dealer-assembled Ram Runner, starts the bidding at \$42,465. That only gets you the Pentastar V-6 and rear-wheel drive. For added boldness, tack on another \$5,100, as we did, for four-wheel drive with the 395-horsepower, 5.7-liter Hemi V-8. Select \$4,885 worth of options including a limited-slip rear differential, RamBox, skidplates, and Uconnect with the 8.4-inch touchscreen, and you end up with our \$52,450 two-tone Flame Red/Brilliant Black, all-inclusive truck.

The Rebel isn't intended to be as manic an off-roader as the Ram Runner, but it still received big changes to honor its debut. The new-design exterior with the prominent,

mustachioed front end encompasses the most polarizing Ram 1500 aesthetic transformation since the 1994 model year. Chassis and suspension tweaks give the Rebel greater off-road performance while retaining the fantastic on-road behavior that helped earn the half-ton Ram its back-to-back 2013 and 2014 Truck of the Year crowns. Air suspension with Rebel-specific Bilstein dampers comes standard, and the adjustable ride heights have been altered from the standard Ram's to better reflect its off-road mission. (The Rebel's "Normal" height roughly equals other Rams' "Off Road 1" height.)

The Tundra TRD Pro has its own set of Bilstein shock absorbers working in conjunction with the front coil and rear leaf springs, all tuned to harmoniously cooperate whether it's traversing concrete highways or a fire road up in the mountains. Positioned a rung above the optional TRD Off-Road package, this Tundra is the TRD Pro flagship. Our Inferno orange specimen starts at \$45,195 for the



PALATIAL The Toyota Tundra TRD Pro comes with a unique seat pattern, a special shift knob, and an insert for the center console bin top. The CrewMax back seat is enormous, too.





CrewMax cab. An extra \$3,200 for the 17-inch forged TRD wheels swathed in BFGoodrich All-Terrain T/A KO tires is money well spent, and \$410 for a drop-in bedliner and a two-piece mini tie-down set with hooks push the Toyota's total to \$48,805. In truth, neither truck present is a straight-up Raptor rival. However, both brands will gladly take would-be Raptor customers' cash.

The Tundra's transmission temperature warning had gone off while we were tackling man-made obstacles, taking turns driving and spotting in Hungry Valley's four-wheel practice area, but it turned itself off once the truck started moving and passing air where it needed to go. That fleeting concern gone, we had a more pressing issue with the Tundra: ensuring the mud flaps and exhaust outlet tips sitting behind the wheels (and in danger of getting whacked by the objects we were driving over) got nicked as little as possible.

Neither truck is ideal for the Rubicon Trail, as both have too much front and rear overhang and too long a wheelbase, but the TRD Pro and Rebel suspensions soak up the blows in creepy-crawly conditions like those found in Hungry Valley. Both trucks offer comfortable perches with outstanding visibility of upcoming obstacles, and each boasts abundant low-end grunt to effortlessly idle-crawl through the hairiest terrain. But it didn't take long to find the differences in these off-roaders. The Tundra's BFG tires had a bit more stick at the points of contact, finding traction a smidge more easily than the Ram's Toyo Open Country A/T IIs. Not that the Rebel was fighting for grip. Conversely, the Ram required a little less human muscle to handle while bounding from rock to rock.



DROOPY It might look more rugged than regular Rams, but the Rebel doesn't have more wheel travel than other 1500s.

TRD PRO

HOW TO BOOST YOUR Off-Road-Truck Street Cred

Short of splurging on a certain bumper/hitch receiver-dangling accessory that resembles a part of the male anatomy, how can you elevate your off-road truck's street cred for cruising the boulevards? Here are the factory insights we gleaned from the Ram 1500 Rebel and Toyota Tundra TRD Pro.

BIG BADGES Don't let anyone forget where your allegiance lies. The Tundra Pros things up with specially stamped side panels in the bed and satin black badge trimmings. Mindful of potential cases of amnesia, the Ram features enormous "Ram" lettering splashed across the tailgate. Also a good idea, apparently: hood vents that don't actually channel air.

RAD TIRES Sure, all-terrain street tire treads are engineered to optimize grip in all conditions, but they also must be pleasing to the eye. Ram was so excited about the Toyo Open Country A/T II that it embossed the tread pattern into the seat inserts. The Tundra's optional BFGoodrich All-Terrain T/A KO is a well-known quantity in the truck community. Owners have self-reported more than 100 million miles of use through tirerack.com surveys, nearly 8 million more than the next two tires combined (within the on-/off-road all-terrain category).

ACTUALLY GO OFF-ROADING The United States offers a fantastic array of outdoor off-highway touring possibilities, everything from wintry forests to sand dunes, rock gardens to water bogs, extinct volcanoes, river crossings, swamplands, and more. Enjoy it all, and remember to tread lightly.



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COMPARISON



2ND PLACE Ram 1500 Rebel 4x4 Hemi

Looking for a little more special spice off-road.

1ST PLACE Toyota Tundra TRD Pro

Ready to feel like an incognito off-road pro.

THE GRIND
According to statistics, most half-tons spend the majority of their lives on pavement. These two both excel on it.

The Tundra's steering effort was higher at slow speeds, and its cab jiggled more and needed more time to settle as the tires dropped and rose. The Rebel glided over the same jagged topography, its suspension masterfully controlling the cab whether the air springs were set to Normal or inflated to the 1-inch-taller Off-Road position.

Both Ram and Tundra excelled at comfort. In fact, pickup trucks are among the most comfortable vehicles on sale today. Automakers have been able to contain unloaded-bed rear-axle hop, and better tires, enhanced cab insulation, and smart suspension tuning make the TRD Pro and Rebel a pleasure for commuting. Tire noise abatement is remarkable for the pair, so much so that the primary noises are wind-sourced on the Rebel or originate from the burbling and

deep TRD exhaust. Ram continues to score for on-road comfort, and the TRD Pro is the most comfortable Tundra we've experienced.

The comfort and smoothness allow the trucks to build speed deceptively quick. Sitting higher off the ground has a strange way of dulling the sensation of speed. Yes, the V-8s are roaring, but there's not as much drama in the speed they're generating, unlike, say, in a low-slung Ariel Atom. In a straight line, the two keep pace with each other up to 40 mph; the less powerful Tundra comes alive thereafter, besting the Ram to 60 mph (6.6 versus 6.8 seconds) and through the quarter mile (15.2 seconds at 91.8 mph to 15.3 at 89.4). Although both engines have 5,600-rpm power peaks, the Tundra's quad-cam V-8 feels much happier high up in the rev range.

The gas-powered motivation came in handy when we graduated from the 4WD practice area and entered Hungry Valley's interior, where dozens of trails awaited our exploration. After marking out a short loop where we'd be able to stage repeatable runs, we set off, Martinez in the Rebel following me in the TRD Pro.

For the next few minutes, I felt like I was back in Baja California, Mexico. Last year, Martinez and I did 2,500 miles of Baja primarily off-road with the then-brand-new TRD Pro lineup over seven days ("We Are the Baja Stormtroopers," April 2015). Whipping the Tundra around in America's California helped me remember those moments, like how the consternation of feeling I was in a "foreign" place melted away with seat time.





Or like how the fun that can be had in the dirt increases with added speed. During instrumented testing, the BFGs only managed an average lateral acceleration of 0.66 g (the Ram's Toyos did 0.71), leaving the Tundra to clock a laid-back 30.6-second figure-eight time at 0.53 average g (the Ram took 29.1 seconds at 0.60 g). In the loose stuff, where the stability control isn't actively working to induce understeer once the meager grip gives out on pavement, the Tundra's power and handling can really be harnessed by the driver. You steer, it steers. You gas, it goes. You brake, it slows down.

The Rebel, Martinez warned me as I sat at our start/finish point, is not quite as responsive. "Traction control is super aggressive."

The first mistake I made was trying to drive the Rebel like the TRD Pro—the Ram promptly made me feel like an idiot. With the cluster display alternating between "service throttle" and "service brakes" warnings, it was quite clear the Ram didn't like my left-foot braking or the speed I was trying to carry. The steering effort is calibrated to feel heavier for a greater sense of directness and for greater precision when rock crawling, so it felt even heavier as the truck fought my inputs. The Toyos' grip off-road trailed that of the Tundra's BFGs, and the Ram got into the ABS sooner and more frantically while the stability control took the gas pedal out of the driver's control. We worked up a sweat hustling the Ram. Too much of a sweat for a mild summer morning.

The Rebel and TRD Pro are close in everyday livability, comfort, and fuel economy. Ram puts out great consumer-focused features, and the superbly appointed interior still heads the class. They're both great trucks, and off-roading isn't everything. It is, however, ultimately what we set out to test. And the choice there was clear.

"I just want to stay out here all day," Martinez said wistfully, eyeballing work emails on his iPhone.

"Yeah," I determined, "but I don't want to run in the Rebel again." ■

2015 Ram 1500 Rebel 4x4 Hemi	POWERTRAIN/CHASSIS	2015 Toyota Tundra TRD Pro 4x4
Front-engine, 4WD	DRIVETRAIN LAYOUT	Front-engine, 4WD
90-deg V-8, iron block/alum heads	ENGINE TYPE	90-deg V-8, alum block/heads
OHV, 2 valves/cyl	VALVETRAIN	DOHC, 4 valves/cyl
345.1 cu in/5,654cc	DISPLACEMENT	345.6 cu in/5,663cc
10.5:1	COMPRESSION RATIO	10.2:1
395 hp @ 5,600 rpm	POWER (SAE NET)	381 hp @ 5,600 rpm
410 lb-ft @ 3,950 rpm	TORQUE (SAE NET)	401 lb-ft @ 3,600 rpm
5,800 rpm	REDLINE	5,900 rpm
14.9 lb/hp	WEIGHT TO POWER	15.4 lb/hp
8-speed automatic	TRANSMISSION	6-speed automatic
3.92:1/2.63:1/2.64:1	AXLE/FINAL-DRIVE RATIO	4.10:1/2.41:1/2.64:1
Control arms, air springs, anti-roll bar; live axle, air springs, anti-roll bar	SUSPENSION, FRONT; REAR	Control arms, coil springs, anti-roll bar; live axle, leaf springs
19.1:1	STEERING RATIO	18.1:1
3.4	TURNS LOCK-TO-LOCK	3.6
13.2-in vented disc; 13.8-in disc, ABS	BRAKES, F; R	13.9-in vented disc; 13.6-in vented disc, ABS
8.0 x 17-in, cast aluminum	WHEELS	8.0 x 17-in, forged aluminum
285/70R17 121/118R M+S Toyo Open Country A/T II	TIRES	285/70R17 121/118R M+S BFGoodrich All-Terrain T/A KO
DIMENSIONS		
140.5 in	WHEELBASE	145.7 in
68.6/68.0 in	TRACK, F/R	68.7/68.7 in
229.0 x 81.5 x 75.3-79.1 in	LENGTH X WIDTH X HEIGHT	228.9 x 79.9 x 77.2 in
39.8 ft	TURNING CIRCLE	44.0 ft
5,885 lb	CURB WEIGHT	5,851 lb
56/44%	WEIGHT DIST, F/R	56/44%
5	SEATING CAPACITY	5
41.0/39.9 in	HEADROOM, F/R	39.7/38.9 in
40.9/40.2 in	LEGROOM, F/R	42.5/42.3 in
65.9/65.7 in	SHOULDER ROOM, F/R	65.7/65.5 in
67.4 x 66.4 x 20.0 in	PICKUP BOX L X W X H	66.7 x 66.4 x 22.2 in
50.3 cu ft	CARGO VOLUME	56.9 cu ft
51.0 in	WIDTH BETWEEN WHEELHOUSES	50.0 in
915 lb	PAYLOAD CAPACITY	1,349 lb
10,150 lb	TOWING CAPACITY	9,800 lb
6,800 lb	GVWR	7,200 lb
15,950 lb	GCWR	15,300 lb
TEST DATA		
ACCELERATION TO MPH		
2.3 sec	0-30	2.3 sec
3.5	0-40	3.5
5.1	0-50	5.0
6.8	0-60	6.6
9.1	0-70	8.8
11.8	0-80	11.4
15.6	0-90	14.5
3.6	PASSING, 45-65 MPH	3.5
15.3 sec @ 89.4 mph	QUARTER MILE	15.2 sec @ 91.8 mph
138 ft	BRAKING, 60-0 MPH	145 ft
0.71 g (avg)	LATERAL ACCELERATION	0.66 g (avg)
29.1 sec @ 0.60 g (avg)	MT FIGURE EIGHT	30.6 sec @ 0.53 g (avg)
1,550 rpm	TOP-GEAR REVS @ 60 MPH	1,600 rpm
CONSUMER INFO		
\$47,565	BASE PRICE	\$45,195
\$52,450	PRICE AS TESTED	\$48,805
Yes/yes	STABILITY/TRACTION CONTROL	Yes/yes
Dual front, front side, f/r curtain	AIRBAGS	Dual front, front side, f/r curtain, front knee
3 yrs/36,000 miles	BASIC WARRANTY	3 yrs/36,000 miles
5 yrs/100,000 miles	POWERTRAIN WARRANTY	5 yrs/60,000 miles
5 yrs/100,000 miles	ROADSIDE ASSISTANCE	2 yrs/25,000 miles
32.0 gal	FUEL CAPACITY	26.4 gal
15/21/17 mpg	EPA CITY/HWY/COMB ECON	13/17/15 mpg
225/160 kW-hrs/100 miles	ENERGY CONS, CITY/HWY	259/198 kW-hrs/100 miles
113 lb/mile	CO2 EMISSIONS, COMB	1.33 lb/mile
Unleaded midgrade	RECOMMENDED FUEL	Unleaded regular
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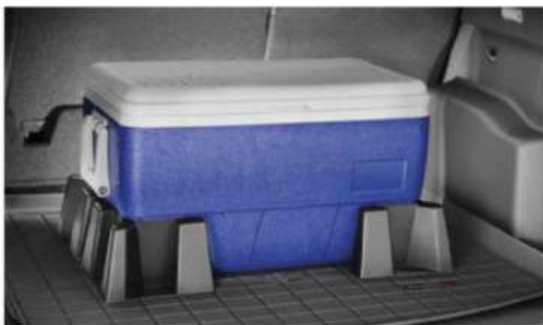
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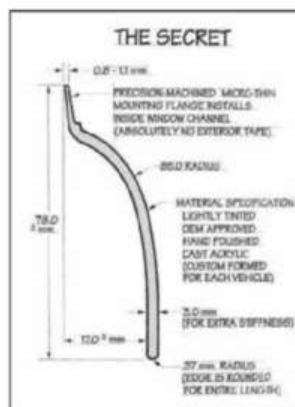
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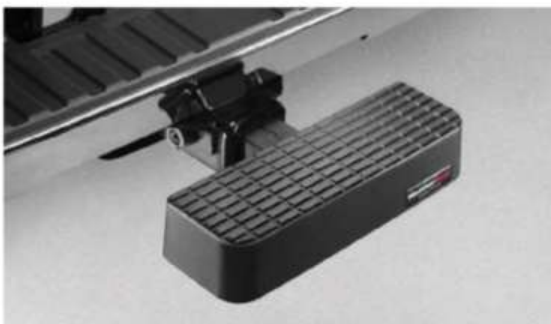
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THE ARSENAL

WORLD WAR II | **Detroit Arms America**

Words Scott Burgess **Photos** Chrysler, Ford, GM Heritage Center



DETROIT'S PRODUCTION
BATTLE TO WIN WORLD WAR II

OF DEMOCRACY



In 1940, the United States was depleted and alone. Decades of isolation and a global depression had created a nation unresponsive to the world beyond its borders. But the battles raging in Europe and Asia were growing steadily closer.

Despite serious opposition to joining another foreign war, President Franklin

Roosevelt understood the magnitude of the pending carnage. We weren't ready when he mentioned the Arsenal of Democracy 75 years ago, but he planted the seeds to the most prolific—and most lethal—manufacturing story in the history of the world. It has never been repeated, and it likely never will be.

"The more you study it, the more you learn about it, the harder it is to believe it actually

happened," says A.J. Baime, an automotive journalist and the author of "The Arsenal of Democracy: FDR, Detroit, and the Epic Quest to Arm America," a New York Times best-seller.

Seventy-five years ago, even the kingpins of Detroit—General Motors' Bill Knudsen, Chrysler's K.T. Keller, and Dearborn's Edsel Ford—couldn't fathom what their companies would accomplish in preparing us for war.



THE CADILLAC OF TANKS A worker directs a crane operator to lower an M-24 tank. The Cadillac plant converted from civilian cars to tanks in 55 days.

This poster went up in some factories that for the first time included women as part of the workforce.

..and
PLEASE



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WWII | Detroit Arms America

They were car men pushing metal down assembly lines. (Knudsen left GM to lead Roosevelt's war effort, becoming the architect of America's arsenal. He worked for \$1 a year.)

In 1939, the U.S. military was laughable. The Army's own chief of staff, Gen. George C. Marshall, ranked it 19th in the world, one spot behind Portugal, in a report to the president. Roosevelt was about to change that—and America—forever.

"We must be the great arsenal of democracy," Roosevelt said during his December 29, 1940, fireside chat. "For us this is an emergency as serious as war itself. We must apply ourselves to our task with the same resolution, the same sense of urgency, the same spirit of patriotism and sacrifice as we would show were we at war."

The Axis powers laughed at the speech and scoffed at subsequent production goals. In 1942, a month after the attack on Pearl Harbor, Roosevelt said America would build

60,000 planes for the year, and the next year it would more than double that number.

Suppliers around the nation, shorthanded and scrounging for raw materials, worked nonstop: destroyers out of Boston, battleships out of Philadelphia, P-51 Mustangs out of Inglewood, California.



If there was a factory anywhere in the U.S., it made something for the war.

Detroit was the beating heart. Carmakers built everything: tanks, airplanes, radar units, field kitchens, amphibious vehicles, jeeps, bombsights, and bullets, billions and billions of bullets. Detroit, with 2 percent of the population, made 10 percent of the tools for war.

"Perhaps the most amazing thing was the speed in which they changed over from cars to war machines," said Bob Kreipke, Ford's corporate historian.

Indeed, many projects began before the war started. But after December 7, 1941, all private automotive production stopped within three months. Car tools were pushed to the side and covered with tarps as tool-and-die men created the implements of war. Assembly lines were reconfigured. Tens of thousands of people were hired and trained. Logistics of unimaginable proportions were penned to get Spitfire engines to England, tanks to Russia, and guns to China,



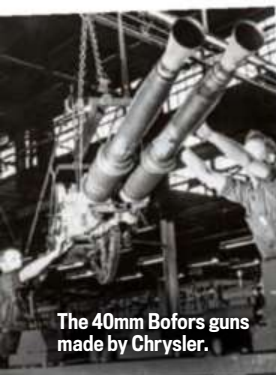
A CHEVROLET WORKER uses an air tool during assembly at a plant in Toledo during the war.

Come bearing bearings

The wheels of war would cease moving without ball bearings. So would the machines that build the wheels of war, which cannot operate without the proper bearings to reduce friction between moving metal parts.

In fact, the U.S. military attempted to destroy factories in Schweinfurt and Regensburg, Germany, specifically because they produced bearings. Destroy the bearings, destroy production, and end the war six months early, strategists thought. But the first two raids proved utter disasters for the Americans for a multitude of reasons, including strong defenses surrounding the factories that made the innocuous cogs that enabled Germany's deadliest machines.

The Germans intended to protect their bearings as long as possible.



The 40mm Bofors guns made by Chrysler.

Suppliers around the nation worked nonstop; Detroit was the beating heart.



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SEPT 19-20 Carolina Motorsports Park, SC

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AUDACITY Ford promised—and delivered—one B-24 Liberator every hour by the end of the war.

all the while building up America's very real military arsenal. Blueprints were studied, shared, and often improved.

"One important fact to consider," said Brandt Rosenbusch, U.S. manager of the historical archives at Fiat Chrysler Automobiles, "is how Detroit became progressively more efficient at building things during the war."

Chrysler had been tasked with building 40mm anti-aircraft guns, known as Bofors guns, which initially took 450 man-hours to build. By the end of the war, Chrysler cut that time to 10 man-hours.

Similar stories echoed along Detroit's Woodward Avenue. Aircraft builders in California first sneered at Ford's promise to deliver one B-24 Liberator every hour by the end of the war from a facility not yet built and 35,000 workers not yet hired. But Ford delivered. When Keller was asked by the War Department if Chrysler could build a tank, he gave a resounding "yes" before asking, "What's a tank look like?"

Nothing was impossible, whatever the assignment. Products rolled off assembly lines faster than spinach grew in a victory garden.

"There was amazing ingenuity and will to get things done," said Greg Wallace, GM's Heritage Center director.

Ford built the largest aircraft factory in the world in just over a year. Willow Run featured 3.5 million square feet of factory space and an assembly line more than a mile long. Chrysler broke ground on its tank assembly plant in October 1940 in Warren, Michigan. The first tank rolled off the assembly line in April 1941—before the plant was finished.

Even when production started, things never ran smoothly. "They were changing the design of these products on the fly," Charles Hyde, retired Wayne State University professor and author of "Arsenal of Democracy: The American Automobile Industry in World War

Hard Right: Building Willow Run

Designed by famed Detroit architect

Albert Kahn, Willow Run was a monument to the mechanized world. The building featured 3.5 million square feet of assembly space, employed 35,000 to 42,000 people, built 8,600 B-24 Liberators during World War II, and had a mile-long assembly line with 28 stations. A special forge at the plant could crank out 5 million rivets a day.

One special feature was the 90-degree turn the assembly line took. Ford built a rotating table to turn an airplane during assembly and continue it down the line. The reason for the hard right, according to Ford's historian, was to keep the assembly plant out of Washtenaw County, where Ford said he did not want to give Democrats one cent of his tax dollars.



HURRY-UP OFFENSE Ford used two nine-hour shifts to build the B-24 as the pilot and crew slept on cots waiting for delivery.

A Fully Supplied Arsenal The U.S. produced more than planes and tanks during World War II.

Battleships	10
Aircraft Carriers	27
Submarines	211
Cruisers/Destroyers/Escorts	907
Rail Road Locomotives	7,500
Guns and Howitzers	41,000
Landing Craft	82,000
Steel Production (tons)	434,000
Rifles and Carbines	12,500,000
Rounds of Ammunition	41,000,000,000

II," said. "Every couple of weeks, they would modify the design, making hundreds, sometimes thousands of changes. There was little testing except by the soldiers in the field."

Everything from initial product quality and the lack of women's restrooms at factories to the loss of trained employees to the military and the need for raw materials was a constant drain, Baime said. "It was all about problem solving, but the problems never ended."

Eventually, every problem found an answer. Carmakers tasked with making bullets learned that copper shortages would not allow them to use brass. In less than six months, metallurgical scientists from Detroit discovered a way to make the cartridges out of steel, and production was underway.

When engineers needed a tank engine fast, they created the Chrysler A57 Multibank, which tied five engines together to create a 21-liter 30-cylinder engine that produced 425 hp and 1,060 lb-ft of torque. It wasn't the most elegant solution, but it worked, it was cheap, and it fit inside a Sherman tank.



GETTY IMAGES

E=MC Detroit

Scientists in Los Alamos, New Mexico, working on the most secret project in World War II enlisted Detroit to build their atom bomb. Those scientists believed only pure nickel parts could resist the corrosive powers of the hexafluoride gas used inside Fat Man and Little Boy, but producing two pure nickel containment spheres would require all the nickel mined in the U.S. for the next two years. Chrysler was able to show that specially nickel-plated parts could work just as well, and it set up a shop near Detroit to build them. However, workers could not know what they were building, what it was for, or when it needed be done. Another Chrysler factory nearby built engines that would power the B-29 Superfortress, the plane that would deliver those devices.

So much was possible, in part, because of the immense cooperation. "Before the war, these companies were intense rivals," Baime said. And none of them cared for the pro-union, capitalist-bashing Roosevelt.

During the war, however, companies worked together extensively, sharing plans and proving grounds, Hyde said. When the military selected the Willys-Overland MB as its primary small vehicle, Willys didn't have the capacity to meet the order, so Ford was asked to build it, too. That vehicle, commonly known as the jeep, returned to America, and a newer version was created for civilians. It was one of the few vehicles to have a life after 1945.

The Willys jeep was a favorite. It began a second career as a civilian vehicle after the war ended.



WILLOW RUN had a sharp turn to avoid Washtenaw County, which Ford said was full of liberals.

Perhaps the biggest lesson carmakers learned during the war was how to quickly change lines and retool on the fly, Kreipke said. No one in the world did it as well as America. That meant consumers would see a large number of new car styles and frequent changes. Choice and abundance became a staple in America's post-war car culture.

But the Arsenal's impact on the U.S. was deeper. It introduced more women to the workforce and began to put cracks in the walls of segregation. It changed the way people saw themselves and others. The work was hard, the hours were long, and by no means should nostalgia cause anyone to forget the brutality of what that work begat. Americans united like never before in the absolute obliteration of our enemy.

That changed our future—a future created on an assembly line that started in Detroit. ■

The Battle over Production The production numbers during World War II show how America outproduced the world.

Aircraft production	1939	1940	1941	1942	1943	1944	1945	Totals	Tank production (1939-1945)
United States	2,141	6,068	19,433	47,836	85,898	96,318	46,001	303,695	United States 60,973
Britain	7,940	15,049	20,094	23,672	26,263	26,461	12,070	131,549	Soviet Union 54,500
Soviet Union	10,382	10,565	15,737	25,436	34,900	40,300	20,900	158,220	Britain 23,202
Germany	8,295	10,862	12,401	15,409	24,807	40,593	7,540	119,907	Germany 19,926
Japan	4,467	4,768	5,088	8,861	16,693	28,180	8,263	76,320	Italy 4,600
									Japan 2,464

Source: The National World War II Museum, New Orleans



The introduction of women in factories was revolutionary. They were essential in aircraft and munitions assembly, but women rarely made the same wages as men.

INSIDE STORY

The sumptuous new 7 Series interior is the most luxuriously crafted yet from BMW. It's laden with technology, too, including iDrive 5.0 with gesture control, and an available 7-inch touch control tablet in rear seat armrest.

TECHNOLOGY RULES



Earnest engineers inside BMW's giant FIZ engineering center in Munich will be dismayed by this: Most people are going to talk

less about the 2016 BMW 750i xDrive than they will about its key. A body with carbon-fiber structural elements? An adaptive drive mode that combines data from forward-looking cameras and the sat-nav to prepare the air suspension and eight-speed automatic transmission for the road ahead? Electrically operated active anti-roll bars? Four-wheel steering? Twin-turbo

V-8? Yeah, yeah, yeah ... But hey, you gotta check out this key, dude. ...

It's called the BMW Display Key, it's a \$250 option, and it's basically a remote-control key with a baby iPhone-like touchscreen that can display information such as fuel level, estimated range, service details, and whether the car is locked. A gimmick? Possibly. But



it doesn't really matter. What matters is people are talking about it, and therefore about BMW's new high-tech flagship sedan. The 750i xDrive features a lot of other surface-level technology that makes for great driveway theater. The iDrive 5.0 system now features touchscreen control in addition to the familiar rotary controller—you can pinch and zoom the map on the screen, or swipe between menu options, for example—as well as gesture control for functions such as audio volume control or answering phone calls.

The \$3,900 Luxury Rear Seating package includes a 7-inch touchscreen tablet in the



The image shows the front interior of a BMW 7 Series sedan. The driver's side features a four-spoke steering wheel with the BMW logo and a driver wearing a watch. The dashboard is finished with tan leather and includes a large, curved infotainment screen displaying a radio station list. Below the screen are air vents and climate controls. The center console has a gear shifter and handbrake. The rearview mirror is visible at the top, and the car is driving on a road with hills in the background.

FLAGSHIP SEDAN IS CUTTING EDGE TO ITS CORE

rear seat center console. It controls functions such as seat adjustment, interior lighting, and air-conditioning, as well as the infotainment, navigation, and communications systems.

But there's also cutting-edge technology at the very core of this car—literally. The body-in-white is made from a mix of aluminum, ultra-high-tensile steels, and carbon fiber. Manufactured using processes pioneered on the BMW i3 and i8 models, and using carbon fiber made at BMW's new plant in Moses Lake, Washington, the Carbon Core body has contributed to a 190-pound mass reduction compared with the previous-generation 7 Series. Crucially, many of the carbon-fiber structural elements are used in the roof, helping lower the car's center of gravity.

Our 750i xDrive tester was also fitted with the \$4,100 Autobahn package, which adds electrically actuated active anti-roll bars and the Integral Active Steering rear wheel steering system, plus the \$3,000 M Sport package, which adds a host of appearance items, including different design wheels, different front and rear bumper fascias, a different steering wheel, and blacked-out exterior trim.

The twin-turbo, 4.4-liter V-8 now features two twin-scroll turbochargers mounted in the vee, and a compression ratio bumped to 10.5:1, both of which help boost power to 445 hp at 5,500-6,000 rpm, and torque to 480 lb-ft from 1,800-4,500 rpm. The engine drives through an eight-speed automatic transmission with a control system that among other things communicates with the sat-nav to adjust shift strategies on the fly to match the topography of the road ahead with the driver's current driving style. It's a development of the system pioneered on the Rolls-Royce Wraith.

Rolls-Royce engineers also helped with tuning the air suspension. It has three basic settings: Comfort, the default setting; Comfort Plus, which allows an even more pillowy ride; and Sport, which firms everything up in the usual manner. It also has an Adaptive mode, which utilizes data from the forward-looking cameras, the sat-nav, and driver inputs to adjust effective spring and damper rates to suit upcoming road conditions.

In standard Comfort mode the suspension

is relatively soft yet controlled. The Comfort Plus setting comes closer to matching the Mercedes S-Class in terms of plushness, but secondary body motions are not as well contained. The Adaptive mode is an appropriately BMW compromise, allowing Comfort levels of ride quality and smooth transmission shifts under most conditions, but tensing the suspension and sharpening the tranny when the car senses greater driver involvement and/or more challenging terrain ahead.

Active shutters on the grille and lower fascia, careful management of airflow around the front wheels (the side vent just rear of the wheel opening is functional), reshaped side mirrors, and extensive underbody cladding help reduce air drag by 15 percent compared with the outgoing model. You can feel it, especially in the gas-saving EcoPro mode, which allows the car to coast if you lift off at speeds between 31 and 100 mph.

Pushed hard through the twisties, the 750i xDrive feels relatively light on its feet (BMW claims it's about 300 pounds lighter than a Mercedes-Benz S550 4Matic) and initial

The visible technology in the new 7 Series will impress the hell out of your buddies at the country club, but the styling won't.



POWER PLAY The upgraded 4.4-liter V-8 now delivers 445 hp and 480 lb-ft of torque.

turn-in response is good, though the xDrive all-wheel-drive system provokes plenty of mid-turn understeer through longer sweepers if you're really on it. Lifting off the gas gets the nose to tuck in smoothly, but at the cost of corner speed. We suspect the two-wheel-drive version will deliver better front-end grip, and, hopefully, better steering feel.

The 4.4-liter V-8 has plenty of punch, getting the big BMW to 60 mph four-tenths of a second quicker than an S550 4Matic.

While the visible technology in the new 7 Series—especially that key—will impress the hell out of your buddies at the country club, the styling won't. The well-proportioned and nicely surfaced exterior styling is conservatively handsome in the current BMW idiom; the backlash from the Bangle years still resonates in Munich. Yet while the wheelbase is 1.8 inches longer than an S550's and overall length a tenth of an inch more, the big BMW



LOOK SMART The M Sport package delivers unique wheels, different front and rear fascias, and black trim instead of chrome.

4, 6, 8, OR 12

In mid-2016 the BMW 7 Series will become the first car sold in the United States offering buyers the choice of four-, six-, eight-, or 12-cylinder engines. The current lineup, which is composed of the all-wheel-drive 750i xDrive, the regular 750i, and the 740i powered by BMW's new B58 3.0-liter, 320-hp inline-six, will be joined by an all-wheel-drive 740i xDrive, the V-12-powered 760i, and the plug-in hybrid 740e xDrive, which is powered by BMW's 2.0-liter turbo-four and an electric motor integrated into the eight-speed automatic transmission. (Despite the nomenclature, all U.S. market 7 Series cars are the 126.4-inch long-wheelbase models.)

While the 12-cylinder 7 Series might be the plutocrat's choice, the four-cylinder version is the more technically interesting car. The 740e xDrive features driver adjustable hybrid modes: In the base setting, the electric motor is used to boost acceleration performance, but in what BMW calls MAX eDrive mode it will operate purely on electric power, able to run at speeds of up to 75 mph for a maximum range of 23 miles. Drivers will also be able to control the charge modes of the lithium-ion battery mounted under the rear seat, and whenever the sat-nav's route guidance is active, a predictive power management function will calculate a trip-specific strategy to maximize electric-powered driving through to the destination.

manages to look smaller than the Mercedes.

Inside, the new 7 Series is plushier than any recent BMW. What looks like metal is metal, the wood veneers are beautifully finished, and the leathers are rich and colorful. The 7's ambient lighting and perfume dispenser suggest these features are now de rigueur for German luxury sedans. Some of the minor switchgear is touch-sensitive black plastic, which lacks the mechanical tactile signature you expect in high-end luxury products, and leaves a trail of fingerprints all over the cabin.

"We wanted the Ultimate Driving Machine, plus comfort," says Manfred Wachinger, the man in charge of the car's chassis development. That's a difficult starting proposition, but his team has given it their best shot. The 750i xDrive is what you'd expect of BMW's flagship sedan. With just a hint of S-Class thrown in for good measure. ■



2016 BMW 750i xDrive M Sport

BASE PRICE	\$101,395
PRICE AS TESTED	\$127,545
VEHICLE LAYOUT	Front-engine, AWD, 5-pass, 4-door sedan
ENGINE	4.4L/445-hp/480-lb-ft twin-turbo DOHC 32-valve V-8
TRANSMISSION	8-speed automatic
CURB WEIGHT (F/R DIST)	4,832 lb (47/53%)
WHEELBASE	126.4 in
L X W X H	206.6 x 74.9 x 58.2 in
0-60 MPH	4.3 sec
QUARTER MILE	12.7 sec @ 111.9 mph
BRAKING, 60-0 MPH	113 ft
LATERAL ACCELERATION	0.88 g (avg)
MT FIGURE EIGHT	25.4 sec @ 0.75 g (avg)
EPA CITY/HWY/COMB FUEL ECON	16/25/19 mpg
ENERGY CONS, CITY/HWY	211/135 kW-hrs/100 miles
CO2 EMISSIONS, COMB	1.02 lb/mile



TRANSCENDING THE NAME 'HYUNDAI', 'MOBIS' SETS ITS SIGHTS ON GLOBAL BUSINESS



As announced by Automotive News this past June, Hyundai Mobis was ranked 6th among global auto parts manufacturers, maintaining last year's record. The company has grown to become a world-renowned auto parts maker within just 15 years after being transformed into a manufacturer specialized in auto parts as a means of business rationalization in 1999.



Despite the relatively short history compared to other auto parts manufacturers, Hyundai Mobis has quickly positioned itself to share company with more established manufacturers thanks to the explosive growth of its sister companies Hyundai Motor Company and Kia Motors. Conversely, the constant R&D and intense quality management of Hyundai Mobis has significantly enhanced the competitiveness of Hyundai-Kia Motors and created an environment for win-win development, which has contributed to the overall growth of Hyundai Motor Group.



In particular, modularization, which was first introduced in Korea by Hyundai Mobis, innovatively overhauled the production system of Hyundai-Kia Motors and remarkably enhanced quality competitiveness and productivity. In fact, in the U.S. Initial Quality Study announced by J.D. Power this year, Kia Motors was ranked 1st and Hyundai Motor Company was ranked 2nd. Hyundai Mobis is now supplying a wide range of auto parts to major automobile manufacturers all over the world beyond Hyundai and Kia Motors, and the volume of exports to car makers other than Hyundai-Kia is rapidly increasing: \$1.82 billion in 2011, \$2.26 billion in 2012, \$2.65 billion in 2013, and \$2.83 billion in 2014.

Exported items and clients are also becoming more diversified. Hyundai Mobis is supplying items such as audio, IBS (Intelligent Battery Sensors), vehicle lamps, and ICS (Integrated Center Stacks) to BMW, Volkswagen, and PSA in Europe; ICS to GM in the U.S.; and lamps to Mitsubishi and



Subaru in Japan. In 2002, Hyundai Mobis starting supplying steering columns to Chrysler, its first automaker client aside from its sister companies, and has since been in a partnership with Chrysler for almost 15 years, exporting modules in 2006 and lamps in 2007.

Hyundai Mobis has been able to obtain more orders from new automakers while maintaining its previous partnerships thanks to its efforts in technological development as well as its adherence to quality and deadlines.

Hyundai Mobis has already proven itself to be one of the best in the world in traditional machine parts, successfully manufacturing over 100 million vehicle modules in just 14 years as of 2013. Moreover, it spares no effort and support in enhancing its competencies in technological development under the belief that internalization of core technologies in future cars will guarantee the sustainability of the company. Hyundai Mobis already operates its R&D centers U.S., Europe, China, India and Korea, and it has recently built a new one in 2013 specialized only for electronic parts. Accordingly, Hyundai Mobis is recruiting more and more of R&D staff.



Based on such investments, Hyundai Mobis is accelerating the development of DAS (Driving Assistance System) technology, which is a prerequisite for self-driving cars. Hyundai Mobis is also developing and producing safety convenience technologies such as an advanced smart cruise control (ASCC), a lane departure warning system and lane keeping assist system (LDWS & LKAS), a high beam assist system (HBA & ADB), an autonomous emergency braking system (AEB), a smart parking assist system (SPAS), and blind spot detection (BSD).

Last year, Hyundai Mobis also succeeded in demonstrating self-parking and autonomous driving before the media as a result of efforts toward preemptive development of autonomous driving technology.

Hyundai Mobis plans to make continued investments in R&D and quality control while focusing on sales in order to acquire new clients, thereby achieving 20% of total sales that are solely attributable from exports to global automakers by 2020.

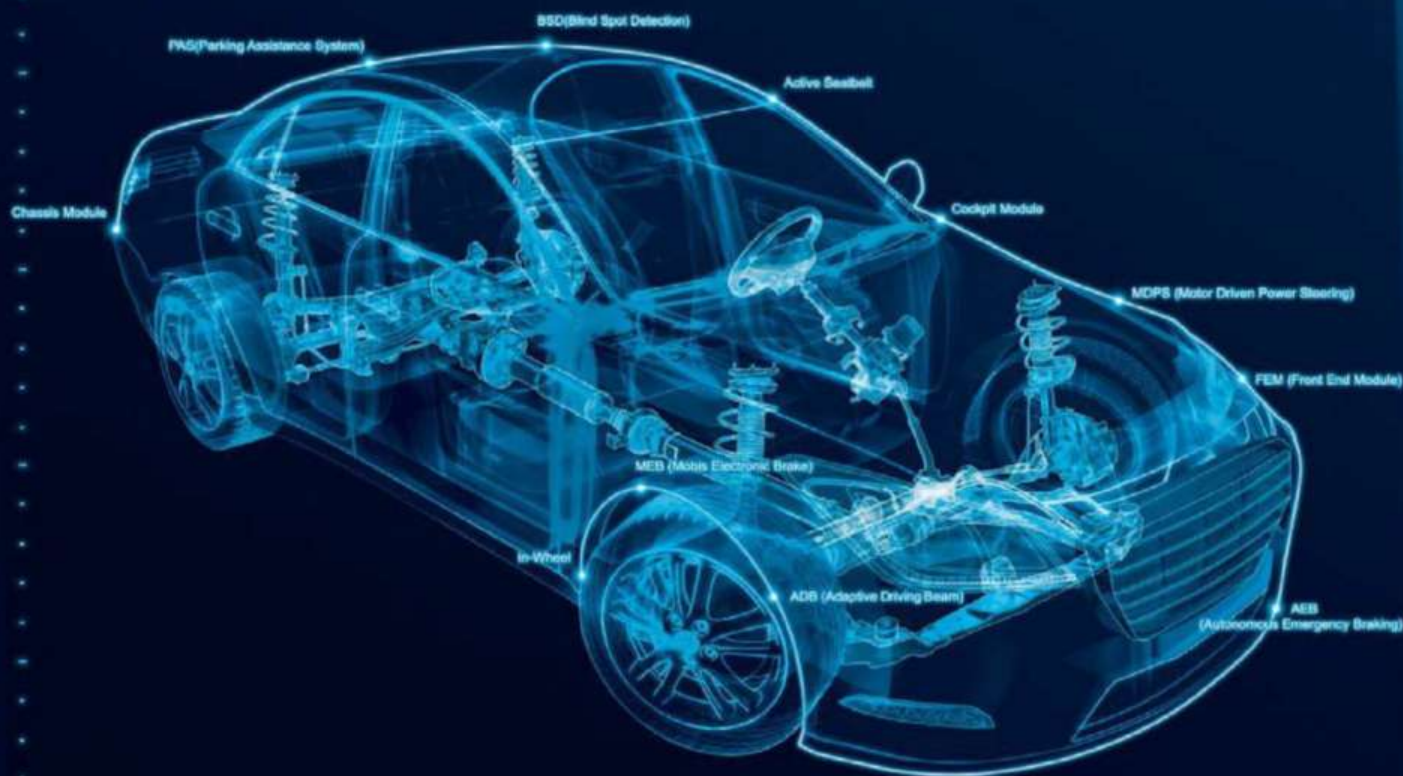
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MORE.



JAGUAR'S BREAKTHROUGH XF MATURES INTO SOPHISTICATED LUXURY



Words Angus MacKenzie

DELIVERED.



Jaguar's XF was a breakthrough car, establishing a fresh, modern design direction for the storied British brand.

And it worked. More than 280,000 XFs have been sold worldwide since the car launched in 2007, making it one of the most successful four-door Jaguars ever.

The brief for the 2016 Jaguar XF was therefore simple, says vehicle program director Ian Hoban: "Deliver more."

And it does, literally. Thanks to a 2.0-inch wheelbase stretch, the new XF delivers rear-seat passengers 0.6 inch more legroom, 0.9 inch more knee room, and 1.1 inch more headroom, plus a bigger trunk for their luggage. U.S. buyers will get more powertrain choice, with the familiar 340-hp, 3.0-liter, supercharged V-6 powering the volume-selling XF 35t and the 380-hp version of the same engine fitted to the sportier XF S. And from mid-2016 the XF will be available with the first diesel engine ever offered in a Jaguar in America, the new 178-hp, 2.0-liter Ingenium inline-four.



But wait, there's ... er ... more. Regardless of engine choice, buyers will be able to choose between rear- or all-wheel drive, plus up to three different suspension setups, and will benefit from the Jaguar EliteCare five-year, 60,000-mile warranty program. Even better, all that more will cost you less: Jaguar Land Rover North America CEO Joe Eberhardt says the base XF 35t will retail for \$52,895, about \$5,000 less than the outgoing model.

The 2016 XF shares Jaguar's advanced

aluminum-intensive architecture with baby brother XE, but more than 80 percent of its parts are different, says Hoban. Aluminum accounts for about 75 percent of the body-in-white, which weighs just 621 pounds yet is 28 percent more rigid than that of the outgoing XF.

The front suspension is an unequal-length control arms setup similar to that used on the F-Type, while at the rear is Jaguar's Integral Link independent suspension. XF S models come standard with Jaguar's adaptive damping system, updated to react faster and for the first time driver configurable on the XF S. Other XFs are equipped with a passive damping system that uses an additional bypass valve in the shocks to deliver a softer ride at lower speeds. An optional version of the passive damping system with firmer shock valving will be available, and the adaptive damping system will be optional across the range.

Steering is the same EPS setup used in the

THE LIGHT STUFF The Jaguar XF's aluminum-intensive suspension and body keep weight down. The body-in-white weighs just 621 pounds.





2016 F-Type. Also borrowed from Jaguar's sports car is torque vectoring by braking, the system by which the inside rear wheel is gently braked on the entry into corners. The torque-vectoring system is used on AWD cars, as well; the AWD system has been tuned to maintain a rear-wheel-drive bias, shuffling torque to the front tires only when it senses a loss of grip.

Other available electronic driver aids include Adaptive Surface Response, a traction-control system that can detect the surface—dry, wet, gravel, snow, ice—and automatically modify the maps for the steering, throttle, transmission, and stability control systems accordingly. The XF's All Surface Progress Control, designed for use in ice and snow, is best described as a hypersensitive low-speed launch control that senses how much power can be fed to the driving wheels before they break traction.

We had the chance to sample an AWD XF S with the 380-horsepower V-6, and a rear-drive 20d powered by the new Ingenium diesel. While it was pleasingly potent—Jaguar claims a 0-60-mph time of 5.0 seconds for the AWD XF S—the 3.0-liter V-6 never sounds silky smooth when being worked hard. It's pleasant enough around town, though, and Jaguar claims fuel efficiency for both the 380-horsepower and 340-horsepower versions has been

The Jaguar XF is poised to become the sporty alternative to the E-Class.

improved a useful 9 percent.

The aluminum-block Ingenium diesel growls under acceleration, and you can feel it buzzing back through the pedals and the floorpan from the moment you fire it up. The 20d models we drove were European-spec; insiders say additional sound deadening will be fitted to U.S. market models. Jaguar claims a 0-60-mph time of 8.1 seconds and a top speed of 136 mph, but the car's forte, of course, is relaxed, efficient, and economical long-distance running. With the Ingenium engine delivering 317 lb-ft of torque at just 1,750 rpm, it hums along at 60 mph in eighth gear turning barely 1,400 rpm. Claimed cruising range is 953 miles based on European testing.

Steering is nicely linear and the front-end grip is impressively tenacious. Overall chassis balance is terrific—a legacy of 50/50 weight distribution—and good damping means the Jaguar remains unfazed by mid-corner lumps and bumps, going exactly where you point

it and staying resolutely on line until the tires reach the limit of adhesion. Even with AWD the XF corners like a rear-drive car; you can adjust the attitude on both entry to and exit from corners with the throttle, and the steering remains remarkably uncorrupted. This might be the nicest AWD sedan chassis in the business.

Indeed, as BMW continues to fritter away the 5 Series' once-legendary steering and handling superiority, and Audi's A6 remains dynamically challenged by the engine hanging out over the front wheels, the 2016 Jaguar XF is perfectly poised to become the sporty alternative to the blue-chip car in the segment, the Mercedes-Benz E-Class. Mission accomplished. More, delivered. ■



2016 Jaguar XF

BASE PRICE	\$46,000 (20d, est); \$52,895 (35t); \$63,695 (S)
VEHICLE LAYOUT	Front-engine, RWD/AWD, 4-5-pass, 4-door sedan
ENGINES	2.0L/178-hp/317-lb-ft turbodiesel DOHC 16-valve I-4; 3.0L/340-380-hp/332-lb-ft supercharged DOHC 24-valve V-6
TRANSMISSION	8-speed automatic
CURB WEIGHT	3,550-3,900 lb (mfr est)
WHEELBASE	116.5 in
L X W X H	195.0 x 74.0 x 57.4 in
0-60 MPH	5.0-8.1 sec (mfr est)
EPA CITY/HWY/COMB FUEL ECON	20/30/24 mpg*
ENERGY CONSUMPTION, CITY/HWY	169/112 kW-hrs/100 mi*
CO2 EMISSIONS, COMB	0.82 lb/mi*
ON SALE IN U.S.	Winter 2015 (35t, S); mid-2016 (20d)

*RWD 35t and S

CATLIKE The XF's interior lacks German showmanship, but its InControl Touch system has a fast-reacting touchscreen with improved graphics and functionality.

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WOW SUPER COUPON

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REG. PRICE \$14.99

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LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/23/16. Limit one coupon per customer per day.

WOW SUPER COUPON

Customer Rating

**32 PIECE
SCREWDRIVER SET**

**SAVE
60%**

\$5.99

REG. PRICE \$14.99

LIMIT 5 - Good at our stores or HarborFreight.com or by calling 800-423-2567. Cannot be used with other discount or coupon or prior purchases after 30 days from original purchase with original receipt. Offer good while supplies last. Non-transferable. Original coupon must be presented. Valid through 2/23/16. Limit one coupon per customer per day.

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WOW SUPER COUPON

Customer Rating



The Lexus RX is the best-selling luxury SUV on the market. By a lot. Its annual sales generally crest six figures, and since its debut for the 1999 model year, it has sold more than 2.1 million copies. Among luxury vehicles, only the BMW 3 Series can match its sales pace. That might be surprising, as the 3 is sexy and fun and the RX is, um, neither. Then again, the ho-hum Camry has been the best-selling car since around the time Justin Bieber donned Huggies, so there's no denying that Americans appreciate unexciting, reliable transportation. But when Lexus unveiled the ultra-edgy fourth-generation RX, it raised the question: Is this a recipe for disaster?

Words Ron Klino

To find out, we headed to Portland, Oregon, for the 2016 Lexus RX's media launch. Almost immediately, "seductive strength" was etched in my mind. Sure, that could describe the mighty Colorado River elegantly carving its way through the Grand Canyon. Or UFC champ Ronda Rousey tipping the scales, bare midriff, at a pre-fight weigh-in. But to RX chief engineer Takayuki Katsuda, it represents the RX. "Strength with a hint of seductiveness" is how he described its design theme, as if seductiveness were nutmeg. Heck, variety is still the spice of life, so perhaps that's not a bad way of describing the RX's countless hard edges, polarizing spindle grille, and floating roofline.

What lies beneath the RX's chaotic facade, though, is typical Lexus ingenuity—a stiffer, stronger, and heavily revised example of the platform used in the Toyota Highlander; more powerful and efficient gas and hybrid powertrains, the former mated to a standard eight-speed automatic and the latter now available in F Sport guise; a roomier and more luxurious five-seat cabin wrapped in a longer (4.7 inches) and wider (0.4 inch) body riding on a stretched (1.9 inches) wheelbase; and added safety and convenience technologies. So despite the origami sheetmetal, don't expect RX sales volume to go anywhere but up.

According to Katsuda-san, a goal with the fourth-gen RX was to heighten driver

THIS CUTTING-EDGE LINE CULTURE TOO SHARP FOR ITS OWN GOOD?



STILL SIX All RXs keep the 3.5-liter V-6, with output ranging from 259 hp (450h) to 295 (350). The 450h (above) adds electric motors for a total of 308 hp.



engagement via improved dynamics. His team started with the body, adding more hot-stamp and high-strength steels, using aluminum for both the hood and the hatch, and incorporating additional adhesive bonding and laser screw welding. The result? Rigidity is up and weight down. (The fourth-gen's estimated curb weight is roughly the same as the third-gen's, which Lexus attributes to added content.) Katsuda then turned to the engine mounts, which were repositioned to minimize NVH while better gripping the powertrain to alleviate the inertial effects of the V-6's mass as it relates to yaw response—i.e. physics pushing the engine

EDGE





left as the vehicle goes right. Along with a retuned and reworked front strut and rear multilink suspension, “optimized” speed-sensing electric power steering, and available 20-inch wheels with Michelin Premier LTX tires, Katsuda’s efforts all contributed to a more dynamic experience.

How dynamic? The 2016 RX will never embarrass a Porsche Macan on a road course or the new twin-turbo Lincoln MKX at a drag strip, but it does leave the third-gen model in the dust. The ride feels more luxurious and quiet, building on Lexus’ reputation of smooth serenity. The steering comes across more responsive and communicative, certainly in F Sport tune. And the chassis seems more composed, buttoned down, and, yes, engaging than ever before. Imagine a grown-up version of our Big Test-winning NX 200t, and that’s the new RX.

A proven 3.5-liter V-6 continues to motivate the volume-selling RX 350. The so-called 2GR-FKS features port- and direct-injection, an 11.8:1 compression ratio, dual overhead cams, and the Atkinson cycle, all of which raise output to 295 horsepower and 267 lb-ft of torque and bump fuel economy to an estimated 20/28/23 mpg city/highway/combined with front-wheel drive and 19/26/22 with all-wheel drive (vs. 18/25/21 and 18/24/20, respectively, for the six-speed 2015 models or 18/26/21 for the 2015 F Sport model with an eight-speed auto and AWD). Bottom line: The

new eight-speed’s two extra gears help unlock 2 more mpg on the combined cycle. Opt for the hybrid RX 450h, and the V-6 switches to a less potent 2GR-FXS 3.5-liter (259 hp and 247 lb-ft) paired with a CVT and two (FWD) or three (AWD) electric motors. Either way, system output is listed at 308 horsepower (Lexus doesn’t cite total torque) with a combined fuel economy of 30 mpg. Off the line, the torque advantage of the RX 450h is evident, but once you get the RX 350 spinning in the upper reaches of the rev range, it feels every bit as quick. Sounds better, too.

Step inside the 2016 RX, and the controversial creased exterior fades into curvaceous, modern Lexus excellence. The interior design is clean, the execution thoughtful and well-presented. The F Sport has drilled aluminum pedals, aluminum trim, exquisite bucket seats, such saucy hide hues as Rioja Red, and an LFA-inspired three-spoke steering wheel that frames a large center-mounted analog tach with an integrated digital speedo. For those of less sporting intentions, the non-F variants offer a variety of exotic trims, including matte bamboo and laser-cut gray sapele wood with aluminum. Resting neatly atop the dash is an available 12.3-inch infotainment screen that offers full-width map display. And it’s always nice to see volume and tune knobs still operating the audio systems, including the optional 835-watt Mark Levinson unit. Naturally, the RX offers

Almost immediately, “seductive strength” was etched in my mind. Like UFC champ Ronda Rousey tipping the scales, bare midriff, at a pre-fight weigh-in.



more interior space, notably 1.2 inches of additional rear legroom (thank you, longer wheelbase), not to mention an impressive ensemble of 10 standard airbags and the optional Lexus Safety System +, which consists of adaptive cruise control, a pre-collision system with pedestrian detection, lane departure alert, lane keeping assist, and intelligent high-beam headlights.

After several hours and a few hundred miles with the RX, I came away thinking, sure, the exterior design is gaudy and outlandish, but the interior is posh, the dynamics are commendable, and at an estimated starting price of less than \$45,000, the value is tough to beat. Recipe for disaster? Considering the hot sales of the similarly styled NX, the RX is looking more and more like a recipe for success. ■

SPORT ME
The F Sport trim, now available on the 450h hybrid, adds a center-mounted tach, drilled pedals, aluminum trim, and leather-wrapped bucket seats, which come in red.

2016 Lexus RX

BASE PRICE RANGE	\$44,995-\$49,000 (est)
VEHICLE LAYOUT	Front engine, FWD/AWD, 5-pass, 4-door SUV
ENGINES	3.5L/295-hp/267-lb-ft DOHC 24-valve V-6; 3.5L/259-hp/247-lb-ft DOHC 24-valve V-6 plus 165-hp front and 67-hp rear* electric motors, 308 hp comb
TRANSMISSIONS	8-speed automatic, cont. variable auto
CURB WEIGHT	4,200-4,750 lb (mfr)
WHEELBASE	109.8 in
L X W X H	192.5 x 74.6 x 67.7 in
0-60 MPH	7.7-7.9 sec (mfr est)
EPA CITY/HWY/COMB FUEL ECON	19-31/26-30/22-30 mpg (est)
ENERGY CONSUMPTION, CITY/HWY	109-177/112-130 kW-hrs/100 mi (est)
CO2 EMISSIONS, COMB	0.64-0.90 lb/mile (est)
ON SALE IN U.S.	Currently

*Rear electric motor on RX 450h AWD only

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KUMHO TIRE ⁷

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SOLUS TA71

NEW Grand Touring All-Season 38 sizes in 15" to 19"

Developed for people who love to drive sporty coupes and luxury performance sedans, the Solus TA71 combines responsive handling with quiet comfort and all-weather traction, even in light snow.

Precisely Angled Snow Sipes create tiny gripping edges that are tuned for traction on cold, slick surfaces.



ROAD VENTURE AT51

NEW On-/Off-Road All-Terrain 43 sizes in 15" to 20"

Developed for jeep, pickup and SUV drivers that want off-road performance from a tire tuned for the road by delivering year-round traction in all terrains and all seasons, even in snow. **Shoulder design** ejects stones, improving traction in mud, snow and loose terrain.



NOTE: Meets severe snow service requirements and branded with the mountain/snowflake symbol.

For complete offer details, visit
www.tirerack.com/specials

*Tires must be purchased from Tire Rack's in-stock inventory between 12:00 a.m. EDT November 1, 2015, and 11:59 p.m. EDT November 30, 2015. Offer not valid if tires are returned. Prepaid card is issued by MetaBank®, Member FDIC, pursuant to license by MasterCard International Incorporated. MasterCard is a registered trademark of MasterCard International Incorporated. The prepaid card is given to you as a reward, refund, rebate or gift and no consideration, value, or money has been paid by you in exchange for the card. Card issued in the name submitted on rebate form and is not transferable, card cannot be issued to minors. Card does not have cash access and can be used wherever Debit MasterCard is accepted. Card valid for up to 6 months, unused funds forfeit at midnight EST the last day of the month of the valid thru date, subject to applicable law. Country restrictions apply and are subject to change. Card terms, conditions, and limitations apply; see MyPrepaidCenter.com/site/mastercard-promo for details.

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Tire Performance Ratings												Total Miles Reported			
		1	2	3	4	5	6	7	8	9	10				
Ultra High Performance All Season															
Continental Eagle Sport All Season (28 Speed)	1	100%	7.7	8.8	8.8	8.8	8.1	8.1	7.3	6.8	5.7	3.0	9.0	8.8	390,300
Continental Continental (28S)	2	99%	7.6	8.8	8.9	8.2	8.8	8.2	8.2	7.4	7.1	6.8	8.3	8.1	46,172,520
Continental Eagle GT All Season	3	97%	8.9	8.7	8.8	8.8	8.1	8.8	7.8	6.5	6.3	5.4	8.2	8.2	981,790
Pirelli P Zero All Season (28S Speed)	4	96%	8.8	8.8	8.9	8.1	8.3	8.5	7.7	6.6	6.7	8.1	8.2	8.4	258,816
Continental Premium All Season (28S Speed)	5	95%	7.8	8.8	8.8	8.8	8.1	8.8	7.1	5.8	5.8	8.8	8.8	7.7	1,640,943
Continental Premium All Season (28S)	6	94%	7.8	8.8	8.7	8.8	8.8	8.8	7.8	6.4	6.2	8.8	7.1	8.2	1,578,503
Pirelli P Zero All Season (28S)	7	94%	8.1	8.8	8.8	8.3	8.7	8.4	8.5	7.7	7.0	7.0	7.4	6.4	246,500
Continental Premium All Season (28S)	8	94%	7.8	8.8	8.8	8.8	8.3	8.7	8.8	5.3	5.8	9.8	9.3	7.9	4,067,893
Pirelli P Zero All Season (28S)	9	90%	7.7	8.1	8.3	8.4	8.8	8.8	8.7	5.3	5.7	8.4	8.2	7.7	23,158,780
Continental Premium All Season (28S)	10	94%	8.7	8.8	8.1	8.8	8.8	8.8	7.7	6.2	6.1	8.0	7.4	7.3	9,587,424
Continental Premium All Season (28S)	11	90%	7.2	8.8	8.8	8.0	8.2	8.8	6.7	4.7	4.8	8.3	7.8	7.5	1,816,325
Pirelli P Zero All Season (28S)	12	90%	8.8	8.8	8.8	8.8	8.8	8.8	8.8	4.8	4.7	8.0	7.8	8.1	3,881,040
Continental Premium All Season (28S)	13	88%	7.4	7.7	7.9	8.1	8.3	8.1	8.4	5.3	5.4	8.1	7.9	7.3	40,038,048

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Designed to provide long on-road life while combining dry handling and wet braking with all-season traction, even in light snow.

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Symmetric Tread design allows crossrotation patterns to improve usable tire life by fighting irregular wear.

Continuous Center Rib contributes straight-line, dry road traction, while independent intermediate and shoulder tread blocks promote handling stability.

Four Wide Circumferential Grooves evacuate water from the contact patch, increasing hydroplaning resistance for **enhanced wet handling and control** in standing water.

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AltiMAX Arctic radials combine a modern tread compound molded into a directional tread design featuring unique grooves and sipes to offer high levels of traction at low temperatures.

All-WeatherDual Tread Compound

Enhances cold weather flexibility and wet traction

Directional Tread Design

Resists hydroplaning on wet and slush-covered roads



Center Stability Rib

Promotes straight-line tracking on dry roads



270° of High Density Siping

Enhances snow traction when accelerating, cornering or braking



Voids for Optional Metal Studs

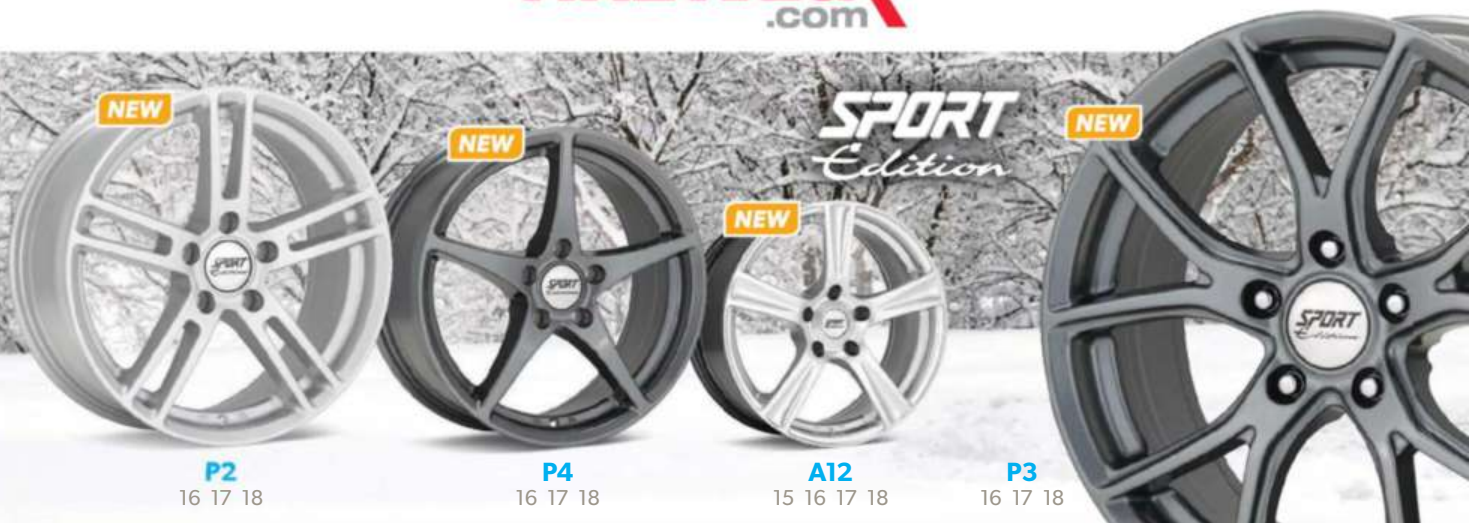
Increase traction on hard packed snow and icy roads

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AltiMAX Arctic meets the severe snow service performance standards of The Rubber Manufacturers Association (RMA) and the Rubber Association of Canada (RAC) for snow traction.





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BRAKES



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GENERAL TIRE

GOODYEAR

MICHELIN

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'15 Fiat 500 Pop
185/60R-14 Dunlop Winter Maxx
14x5.5 ALUTEC Grip



'15 Volkswagen Passat 1.8T SE
215/60R-16 Yokohama iceGUARD iG52c
16x7 MSW Type 22



'15 Toyota Tundra 4WD CrewMax
275/60R-18 Bridgestone Blizzak DM-V2
18x9 Ultra Motorsports Spline

WHICH PERFORMANCE CATEGORY IS RIGHT FOR YOU?

High-Tech Winter Traction



STUDLESS ICE & SNOW

Developed to provide ice and snow traction similar to studded winter tires without using studs, these tires typically trade high-speed ratings and some handling responsiveness for enhanced snow and ice traction.



PERFORMANCE WINTER / SNOW

Developed as high-speed winter tires for European driving conditions, these tires typically trade some deep snow and ice traction for enhanced dry and wet road traction, handling and high-speed capability.

Traditional Winter Traction



STUDDABLE WINTER / SNOW

Developed to accommodate optional metal studs that enhance ice and hard-packed snow traction. When studded (studding available for \$15 per tire), these tires typically trade some noise and ride comfort for extra ice and packed snow traction. When not studded they provide a low-cost winter tire option.

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Tire Rack's Winter Tire & Wheel Packages make changing to winter tires easy and efficient. These high quality, vehicle-specific fitments arrive ready to bolt on your vehicle.

Packages include free scratchless mounting and free Hunter Road Force™ balancing. Plus, all necessary hardware is included at no additional cost!



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225/55R-17 Michelin X-Ice Xi3
17x7.5 Sport Edition SE-14



'15 Ford Edge SEL
245/60R-18 Goodyear Ultra Grip Ice WRT SUV
18x8 Sport Edition P4



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GARAGE

Words Motor Trend Editors



ARRIVAL 2015 Nissan Murano SL AWD William Walker



"So that's the new Nissan Murano. That's a sharp-looking vehicle!" @MT_dubdub

EPA CITY/HWY/COMB FUEL ECON
 21/28/24 MPG **BASE PRICE** \$39,435
PRICE AS TESTED \$41,905

When associate road test editor Nate Martinez first drove the 2015 Nissan Murano, he observed: "Just as in 2002, the form prompts immediate curiosity. 'What is that?' people will surely ask." As it turns out, Nate was right. In the month I've spent behind the wheel of our new long-term Pacific Sunset orange Murano SL AWD, I've had half a dozen or so people come over to ask questions or give me compliments on my SUV. People are intrigued.

At a base price of \$39,435, our SL AWD comes pretty loaded. Nissan put a lot of effort into simplifying the new Murano's interior, reducing the amount of buttons and making the cabin feel luxurious. The NASA-inspired zero-gravity seats with standard heating for the SL range are incredibly comfortable.

The centrally located 8-inch multitouch screen is bright, fast, and easy to use. Bluetooth, SiriusXM, AM/FM/CD/MP3—no matter the source, it's routed through the 11-speaker Bose audio system, including dual subwoofers.

The exterior features LED taillamps and running lights, heated mirrors, silver roof rails, a power liftgate, and remote start, which I refer to as

remote air-conditioning. We opted for the \$2,260 Technology package, which includes a large power panoramic moonroof and a host of active safety equipment, including intelligent cruise control, predictive forward collision warning, and forward emergency braking. We also reached deep and popped for the \$210 floor mats and cargo area protector. All told my new ride empties the piggy



Time will tell if the SL's NASA-inspired zero-gravity seats are comfortable on long trips.

CHEVROLET COLORADO Z71	CHEVROLET CORVETTE	CHEVROLET TAHOE LT	HONDA ACCORD HYBRID TOURING	HONDA CR-V TOURING AWD	UPDATE HONDA FIT	JEEP CHEROKEE TRAILHAWK	KIA SOUL
KIA SOUL EV+	LAND ROVER RANGE ROVER SPORT SC UPDATE	MERCEDES-BENZ CLA250 4MATIC	NISSAN MURANO ARRIVAL	NISSAN VERSA NOTE	RAM 1500 ECODIESEL	SUBARU WRX STI	VOLKSWAGEN GTI UPDATE

RIDE ALONG FOR UPDATES ON OUR LONG-TERM FLEET

SPECS 2015 Nissan Murano SL AWD

PAUL LAGUETTE



CO2 emissions 0.82 lb/mi	MT figure eight 28.2 sec @ 0.60 g (avg)
7.8 sec 0-60 mph	16.0 sec @ 90.5 mph Quarter mile
119 ft Braking distance, 60-0 mph	

Vehicle Layout Front-engine, AWD, 5-pass, 4-door SUV
Engine 3.5L/260-hp/240-lb-ft DOHC 24-valve V-6
Transmission Cont. variable auto
Lateral Acceleration 0.78 g (avg)
Curb Weight (F/R dist) 4,023 lb (59/41%)
Energy Cons, City/Hwy 160/120 kW-hrs/100 miles

bank to the tune of \$41,905.

We haven't put our long-termer through our Real MPG testing yet, but the EPA rates the Murano at 21/28/24 on its city/highway/combined cycles, and combined with a 19-gallon fuel tank and comfy ride quality, that means that my new Nissan should be a great long-distance road-trip vehicle. Hopefully in the next few months I can confirm this fact and rack up a few thousand adventurous miles.

The NASA-inspired zero-gravity seats with standard heating for the SL range are incredibly comfortable.



2015 Volkswagen GTI Ron Kiino



"The GTI's Normal steering mode should be the only mode. It's that good. Lose Sport steering, VW, and call it a day."
 @RonKiino

Service life / 11 mo/19,723 mi
Avg CO2 / 0.68 lb/mi
Energy cons / 119 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$190.37 (2-oil change, inspection; 1-tire rotation, cabin air filter)
Normal-wear cost / \$0
Base price / \$25,815
As tested / \$33,205

REAL MPG FUEL ECON 28.4 MPG comb.

With visual assets manager Brian Vance set to take the reins of a Volkswagen Golf SportWagen, the GTI gets to spend its last few months with yours truly. Can't say I'm disappointed. Over the last 1,500 miles, I've become smitten with the GTI's torquey turbo, seamless DSG, and commodious cabin, which easily accommodates my family of four. And when the road turns squiggly, I get to unleash the GTI's appetite for corners. I toyed with the drive mode selector, opting at first for Sport, but I found the steering too heavy. So I tried Individual, setting the steering to Normal and the engine to Sport. Perfect. In my opinion,

steering feel in Normal is the best of any front-driver.

The GTI's onboard computer alerted me it was time for the 20,000-mile service. Soon thereafter a trip to Pacific Volkswagen rendered a bill of \$190.37 for a synthetic oil change, pollen filter, and full inspection. The OE Bridgestone Potenza S001 tires still had some life in them, but I decided to try a set of Bridgestone's comparable Potenza S-04 Pole Position, courtesy of Tire Rack. A few hundred miles in with the S-04s, I haven't noticed any drop-off in performance or ride quality.



We are fans of the black and red interior theme but really wish the plaid seats were available on higher trims.





2015 Acura TLX Mike Royer



"I've learned from experience when Zach asks to borrow your car, you let Zach borrow your car. #Fear #AlphaZach #takethekeysmister"
@MT_Royer

Ofentimes at the MT mother ship, co-workers will request the use of your long-term vehicle for a move or a road trip. Last month was the perfect storm. Because I was moving, I needed to borrow an SUV, and senior production editor Zach Gale wanted to borrow a more comfortable ride for his trip to Northern California. So we swapped.

From Zach: "We were stuck. After power lines fell across the 101 freeway just south of San Francisco, traffic came to a complete stop. Thanks to the Acura TLX 2.4, however, time spent idling was kept



The brown (officially Espresso) interior seat color has been getting rave reviews from all who see them. They jump out at you and scream exotic luxury. Brown never looked so good.

several occasions, I've seen all the red—traffic at a standstill—on the map and taken a different route. This works even when the navigation system isn't activated. It might be nice if in future system updates, the navigation could add warnings about extreme traffic even if you don't have a destination in the system.

"Aside from appreciating features on the TLX's nav," Zach continued, "the car presented itself well for the rest of our trip in San Francisco. Anyone familiar with Acura sedans besides the flagship RLX may be pleasantly surprised by the TLX's quietness. And I also came to like the brown color of the leather seats—a refreshing change from the normal beige or black. On the drive from L.A. to San Francisco and back, the lane keeping assist system came in handy. Adaptive cruise control would have been really helpful, but that option is restricted to the V-6 model."

I concur with Zach on the TLX's interior. While waiting two hours to exit the Irvine Meadows Amphitheater in Irvine, California, after seeing a show (nav couldn't save us there), I kept the windows up and radio on, successfully silencing all the Rush fans who thought honking would get them home sooner. It does not. As for the brown seats, they really make the interior. Most people comment on them, and all comments have been positive, including from the service representative at Acura who took the vehicle in for its oil change.

Thanks for the scouting report, Zach.

Service life / 5 mo/8,093 mi
Avg CO2 / 0.69 lb/mi
Energy cons / 120 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$113.96 (oil change, inspection, tire rotation)
Normal-wear cost / \$0
Base price / \$32,365
As tested / \$36,420

REAL MPG FUEL ECON 28.1 MPG comb.

to just a few minutes, as the navigation system rerouted us. Our destination was a hotel right off the 101 a number of miles away, so I had ignored the navigation's rerouting suggestion a couple miles earlier, before the jam. I should have paid more attention to the car's traffic rerouting abilities and knowledge of freeway conditions."

I have yet to take a long road trip in the TLX, but the navigation map has saved me. On



2015 Chevrolet Camaro Z/28 Scott Evans



"Haven't driven the Z in weeks, fell in love with it all over again on the way home from work."
@MT_Evans

The Z/28, it goes without saying, is a car with character. It's one of the reasons my co-workers and I like it so much. It's not a generic, do-whatever, point-A-to-point-B car. It has quirks that have to be accepted at face value. To most consumers, those quirks would be needless frustrations, but to car fans, they're endearing at best and worth the trade-off at worst.

Getting back in the Z/28 after weeks in sedans, SUVs, and trucks (I'd been out of the office) was a revelation. Upon first being reacquainted, the Z/28



Running this much camber wears the inside edges of the front tires. Fortunately, the tire held air long enough to get me home.

Service life / 10 mo/14,199 mi
Avg CO2 / 1.13 lb/mi
Energy cons / 197 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$401.39 (2-oil change, inspection; 1-diff fluid change)
Normal-wear cost / \$4,812 (Pirelli P Zero Trofeo Rs)
Base price / \$75,000
As tested / \$76,150

REAL MPG FUEL ECON 17.1 MPG comb.

is difficult to get into, hard to see out of, wider than anything but a midsize barn, and rides like a Conestoga wagon (with the grip of a gorilla playing with superglue, but still). A lot of Corolla drivers might find all that off-putting, but to me and my ilk, it's all part of the experience.

See, after all that crossed my mind, I turned the key, the big LS7 roared to life, and I forgot all about that stuff. The sound of the engine, the power,

the huge grip, and the playful, talkative steering all came rushing in, and the compromises didn't matter. Every time I drove it over the next few days, I drove it hard, basking in the car's performance and responsiveness. Fortunately for me, no law enforcement happened to be in the vicinity. If that isn't what driving is about, I don't want to drive.

It didn't hurt that the Z/28 was wearing brand-new tires, either. A few weeks back, my evening commute was interrupted by a flat tire noise but without the flat tire ride and handling. Turns out a strip on the inner edge of the left front tire had delaminated and was whipping against the wheelwell. The outer edge of the contact patch had life left in it, but the inner edge was completely worn out due to the serious negative camber specified by the track alignment. Just shy of \$2,400 later, a new set arrived at the office for its \$120 mounting appointment. A week later, the brand-new left rear would blow out and strand an editor on the side of a desert back road for seven hours. It's been replaced, naturally.

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2015 Honda Fit EX Erick Ayapana



"Our long-term Honda Fit reaches 20,000 trouble-free miles. The Magic Seats continue to impress."

Service life / 12 mo/20,919 mi
Avg CO2 / 0.60 lb/mi
Energy cons / 105 kW-hrs/100 mi
Unresolved problems / Rear hatch
Maintenance cost / \$194.04 (2-oil change, inspection; 1-tire rotation)
Normal-wear cost / \$0
Base price / \$19,025
As tested / \$19,025

REAL MPG FUEL ECON 32.1 MPG comb.

Our long-term 2015 Honda Fit has entered the tail end of its one-year stint in the #MTGarage. The little red hatch is still running strong, and its odometer has hit 20,000 miles thanks to a few road trips from news editor Alex Nishimoto and associate online editor Stefan Ogbac. Both gentlemen also provide a few thoughts on the Fit.

If you've been following other #MTGarage updates, you'll notice that Nishimoto happens to be the chaperone of one of the Fit's main competitors, a 2015 Nissan Versa Note SR. He shared his

perspective on both cars in a spring update in which he essentially discovers I got the better end of the deal. Nishimoto lists a number of areas where the Fit excels over the Versa Note. For starters, he says fit and finish is much better in the Honda, as is the cargo capacity because of the Magic Seats. Nishimoto also had more fun driving the Fit and definitely appreciated the added horsepower, at 130 hp

for the Honda versus 109 hp in the Nissan.

Meanwhile, Ogbac spent quality time with the Fit after driving it to Palmdale, California, to see historic military aircraft. He's also well-versed with hatches, having owned a Versa hatchback before his current ride, a 2015 Mazda3 hatch. He, too, was a fan of the interior quality and Magic Seats, and he was impressed that the infotainment system allowed him to control his Android smartphone via the touchscreen.

Ogbac also says the Fit's powertrain performed relatively well. "Compared to my old Versa, the Fit does well going up inclines," Ogbac says. The Fit returned 42 mpg during his trip, which consisted of mostly highway miles. His only complaint mimics mine—the infotainment deck needs a volume knob.

Again, the Fit has been nearly perfect, though I've noticed a few issues with the rear hatch. For starters, it needs to be slammed relatively hard for it to fully close. Also, the hatch's release button is located within the chrome strip above the license plate. That chrome strip appears to be flexing and moving more after repeated use of the release button, which has me questioning

its long-term durability. It's something I'll mention for the Fit's next service visit.

The Fit is smelling fresh and clean thanks to its new squash-scented air freshener (from Japan)!



2015 Land Rover Range Rover Sport SC Angus MacKenzie



"Watch the Sport accelerate away from you in a gentle arc, and it looks like a Riva speedboat carving away, bow high, from George Clooney's place on Lake Como."

Service life / 6 mo/8,246 mi
Avg CO2 / 1.19 lb/mi
Energy cons / 207 kW-hrs/100 mi
Unresolved problems / None
Maintenance cost / \$0
Normal-wear cost / \$0
Base price / \$81,020
As tested / \$93,856

REAL MPG FUEL ECON 16.3 MPG comb.

I spent a lot of time looking at the Range Rover Sport in action during this year's Best Driver's Car extravaganza. With 510 hp and the ability to hit 60 mph in 4.4 seconds, along with big sticky tires and excellent body control, it was the go-to camera rig for photographer William Walker while Chris Walton, Scott Evans, and I indulged in sideways silliness in the show cars at Mazda Raceway Laguna Seca.

After watching it on the move, coming and going, sometimes from a distance, sometimes

up close and personal through the driver's side window of a Z06 Corvette, this much I know: This Range Rover Sport doesn't have many bad angles. The dash-to-axle is terrific, the front wheels pushed right to the front corners of the car; the body side swells muscularly over the 22-inch wheels; and that rakish roofline enhances the stance.

I never particularly liked the previous-generation Range Rover Sport. Its blocky, upright styling was

a huge letdown after the promise of the Range Stormer concept that debuted at the 2004 Detroit show. Geoff Upex, then head of design at Land Rover, later admitted design of the production L320 Range Rover Sport had been pretty much done when the Range Stormer appeared, and the overwhelmingly positive reaction to the show car had caught everyone at Solihull by surprise: "We should have pushed [the design of the production Range Rover Sport] more, but we didn't know we could."

The fender flares, the tapering roofline, the strongly raked D-pillars, the ratio of glass to body side, the line from the base of the fender vent that carries through the front door: There's a lot of Range Stormer in the 2015 Range Rover Sport.

The Supercharged Dynamic trim level—now, with the addition of the head-banging Sport SVR, the fourth-highest trim level in a six-model lineup—gets a black gloss finish on the grille, vents, and mirrors, which took a little getting used to. The fake skidplates on the front and rear fascia panels are also trimmed in a darker color, which makes the car look wider. One small niggle—and one fault the Sport shares with the big Range Rover: The D-pillars are finished in a shiny black plastic that quickly accumulates millions of fine scratches after a few trips through the car wash.



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For a wagon, the V60 surprised me at first with its ability to swallow a large amount of photo gear.

The Power Blue Metallic color drew looks and compliments during our time with this sporty, sophisticated wagon.

2015 Volvo V60 T5 Drive-E Julia LaPalme



"The Volvo V60 is a well-appointed combination of performance, style, comfort, and safety. It will be sorely missed."

It's hard to believe a year has gone by with our beloved Volvo V60 T5 Drive-E, but, alas, we were obliged to relinquish the keys and let it go home. Over the 12 months this versatile wagon has been with us, it has served as a photo support vehicle, people hauler, and in-town errand runner. It has surprised us with its cargo capacity and off-road ability, impressed us with its sporty maneuvering and turbocharged takeoff, and charmed us with its sleeper appearance.

We ordered our Power Blue Metallic V60 T5 Drive-E with \$8,850 of options, including the Platinum trim and Sport, Technology, and Blind Spot Information packages. This gave us a smattering of extra features, including leather seats, an auto-dimming rearview mirror, keyless drive, a rear park

Service life / 12 mo / 27,666 mi
Base price / \$36,225
Options / Platinum package (\$4,950: power side mirrors, premium sound system, leather, auto-dimming rearview mirror), Sport package (\$1,500: 19-in wheels, sport seats, sport chassis, paddle shifters), Technology package (\$1,500: adaptive cruise control, forward collision warning with auto brake, lane departure warning), Blind Spot Information package (\$900: blind-spot warning, parking assist, cross traffic alert), Power Blue Metallic paint (\$550)
Price as tested / \$45,625
Avg fuel econ/C02 / 25.4 mpg/0.76 lb/mi
Problem areas / Clogged windshield fluid nozzle
Maintenance cost / \$36 (2-oil change, inspection; 1-tire rotation, cabin air filter)
Normal-wear cost / \$0
3-year residual value* / \$23,725 **Recalls** / None

REAL MPG CITY/HWY/COMB FUEL ECON
 22.0/34.5/26.3 MPG

*Automotive Lease Guide data

assist camera, a HomeLink integrated garage door opener, a grocery bag holder, power retractable exterior mirrors, a navigation system with real-time traffic, a Harman Kardon sound system, a sport chassis, paddle shifters, 19-inch alloy wheels, sport seats, adaptive cruise control, collision warning, pedestrian/cyclist detection with auto brake, lane departure warning, cross traffic alert, lane change merge aid, and front and rear park assist. And that's not even a complete list.

For a wagon, the V60 surprised me at first with its ability to swallow a large amount of photo gear. Compared to an SUV like our long-term Jeep Cherokee, it certainly lacks the vertical room; however, with the back seats folded down, this Volvo provides 43.1 cubic feet of cargo space, enough to accommodate 99 percent of my hauling needs (save a motorcycle-toting trip or two). Proof positive of its utilitarian nature.

From day one, the V60's performance has





never left me wanting. The turbocharged, 240-hp, 2.0-liter four-cylinder engine is good for a 0-60 time of 6.8 seconds, so it's always ready for launch. Not bad for a wagon and certainly plenty to get me up to speed to merge with freeway traffic. I usually put the turbo to use for recreational purposes, to blow off steam, or to pass another vehicle in an efficient manner. Aside from that, the soft clatter of the higher-compression injectors made for a charming diesel-like engine sound.

With the Sport chassis' lower ride height and front strut tower brace, quick flicks of the steering wheel were no problem, as I learned at one point during a drive along I-5. The car in front of me swerved to avoid a large chunk of tire carcass, leaving me little reaction time to avoid it myself.

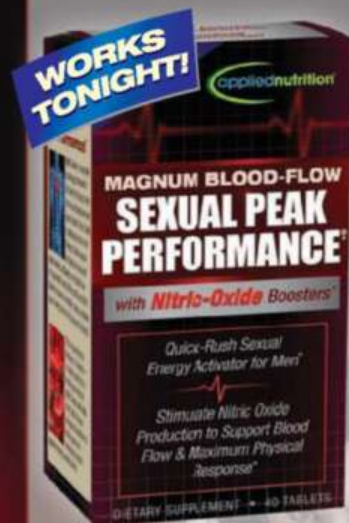
Even at more than 70 mph, the Volvo exhibited little to no body roll and zero traction loss. Steering is very responsive but not twitchy, giving a good feel for the road. With hydraulic brake assist, the four-channel antilock brakes were always strong without too much initial bite, giving a braking distance of 125 feet from 60 mph. That's enough to inspire confidence.

Maintenance on the V60 T5 was never really an issue, save for one little warning that popped up about a low oil level. Searching for the oil level check feature was not the most obvious procedure, bewildering us for months. During one of our service visits, a technician explained that you need to hold down the start button without depressing the brake pedal,



The Volvo V60's Sport package includes leather sport seats that are comfortable around town but not so much for long-distance hauls.

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which puts the car into accessory mode and allows you to electronically check the oil level. With Volvo's four-year/50,000-mile warranty with complimentary services at 10K, 20K, and 30K miles, we only paid \$36 for one elective tire rotation. Our outlay was similar to that for the last wagon we had in our fleet, the BMW 328d, which also came with a complimentary four-year/50,000-mile service program.

At one point we had a V60 Cross Country to compare to the T5 Drive-E. The sport chassis in the T5 Drive-E became much more obvious when driven back-to-back with the Cross Country's softer setup and its touring chassis. Ground clearance on the T5 was the most limiting element of the sporty wagon, making it more timid to traverse particularly bumpy, rocky roads—that and the 19-inch rims with lower-profile tires. Otherwise, the T5 fared just fine alongside its Cross Country variant.

My complaints about the V60 T5 Drive-E were few and far between. The auto start/stop feature,

although perhaps useful for improved fuel economy, was annoying (and it was overly eager at times). The sport seats were a bit hard, which became most obvious during a long-distance haul; after the first hour or two, they just became uncomfortable. Additionally, there were times when the speed limit notification on the dash was completely wrong. Other than those few items, though, the Volvo V60 treated me well.

Although I may not be Volvo's quintessential customer—I have no kids or pets—the Volvo V60 T5 Drive-E quickly became one of my favorite vehicles I've had the pleasure of driving in the past few years. The combination of performance, styling, comfort, and safety make this sweet wagon one I would consider purchasing with my own money if I had the \$45,625 to spare. I'm sad to see it go, and I look forward to the next chance to drive such a fun and sporty wagon. ■



**2015 Volvo V60 T5 Drive-E
POWERTRAIN/CHASSIS**

DRIVETRAIN LAYOUT	Front-engine, FWD
ENGINE TYPE	Turbocharged I-4, alum block/head
VALVETRAIN	DOHC, 4 valves/cyl
DISPLACEMENT	120.1 cu in/1,969cc
COMPRESSION RATIO	10.8:1
POWER (SAE NET)	240 hp @ 5,600 rpm
TORQUE (SAE NET)	258 lb-ft @ 1,500 rpm
REDLINE	6,000 rpm
WEIGHT TO POWER	15.5 lb/hp
TRANSMISSION	8-speed automatic
AXLE/FINAL-DRIVE RATIO	2.77:1/1.86:1
SUSPENSION, FRONT; REAR	Struts, coil springs, anti-roll bar; multilink, coil springs, anti-roll bar
STEERING RATIO	15.0:1
TURNS LOCK-TO-LOCK	2.5
BRAKES, F; R	11.8-in vented disc; 11.9-in disc, ABS
WHEELS	8.0 x 19-in, cast aluminum
TIRES	235/40R19 96V M+S Pirelli Cinturato P7 All Season

DIMENSIONS

WHEELBASE	109.3 in
TRACK, F/R	62.1/62.0 in
LENGTH X WIDTH X HEIGHT	182.5 x 73.4 x 58.4 in
TURNING CIRCLE	37.1 ft
CURB WEIGHT	3,716 lb
WEIGHT DIST, F/R	60/40%
SEATING CAPACITY	5
HEADROOM, F/R	38.7/37.6 in
LEGROOM, F/R	41.9/33.5 in
SHOULDER ROOM, F/R	57.0/55.2 in
CARGO VOLUME BEH F/R	43.1/28.0 cu ft

TEST DATA

ACCELERATION TO MPH	
0-30	2.3 sec
0-40	3.6
0-50	5.0
0-60	6.8
0-70	8.9
0-80	11.4
0-90	14.7
PASSING, 45-65 MPH	3.6
QUARTER MILE	15.2 sec @ 91.3 mph
BRAKING, 60-0 MPH	125 ft
LATERAL ACCELERATION	0.85 g (avg)
MT FIGURE EIGHT	27.1 sec @ 0.63 g (avg)
TOP-GEAR REVS @ 60 MPH	1,500 rpm

CONSUMER INFO

STABILITY/TRACTION CONTROL	Yes/yes
AIRBAGS	Dual front, front side, f/r curtain
BASIC WARRANTY	4 yrs/50,000 miles
POWERTRAIN WARRANTY	4 yrs/50,000 miles
ROADSIDE ASSISTANCE	4 yrs/unlimited
FUEL CAPACITY	17.8 gal
EPA CITY/HWY/COMB ECON	25/37/29 mpg
ENERGY CONS, CITY/HWY	135/91 kW-hrs/100 miles
CO2 EMISSIONS, COMB	0.66 lb/mile
REAL MPG, CITY/HWY/COMB	22.0/34.5/26.3 mpg
RECOMMENDED FUEL	Unleaded regular



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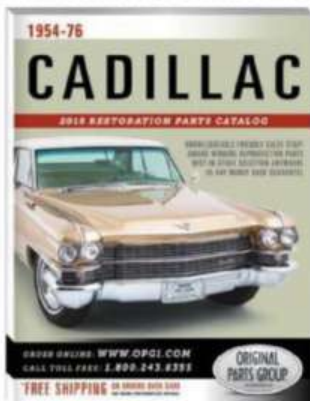
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Angus MacKenzie

The Big Picture

RICH PICKINGS WHEN MONEY IS NO OBJECT



The very rich, as F. Scott Fitzgerald once observed, are different from you and me. The man from Pagani Automobili was explaining that Britain had been the biggest market in the world for the original Zonda when I asked how many Paganis there were in the country. He paused. "It's difficult to say," he shrugged. "The owners often take their cars with them when they travel." He nodded at a white Huayra parked nearby. "That car," he said, "came in from the Middle East a few days ago. The owner wanted to drive it while he was here."

We were inside an anonymous building in the middle of a quiet, nondescript industrial park just off London's traffic-choked North Circular Road. There's a small Pagani Automobili sign outside above the large roller door, the only clue that a handful of the hand-built Italian hypercars—two Zondas and four Huayras, collectively worth about \$10 million—are parked behind it.

There's war in Syria, economic jitters in China, and a clown car circus on Capitol Hill, but in the rarified world of Pagani Automobili, where customers routinely spend \$2 million or more on a car, business is humming along nicely, thank you. The United States is now Pagani's single largest market, accounting for 60 percent of sales of the 720-hp, twin-turbo

V-12-powered Huayra coupe. You're not likely to trip over one in your local Wal-Mart parking lot anytime soon, though: Only 100 are being built, and chassis number 91 has just rolled off the assembly line. Huayra production started in 2011; time marches to a different beat in Horacio Pagani's tiny atelier near Modena.

The London office, where five full-time staff will look after sales and service, hints at changes ahead for Pagani. A new factory, five times bigger than the current facility, is nearing completion in Italy. It's been under construction for several years, and, true to form, Horacio Pagani himself is obsessing over every tiny detail of the design and construction. Beyond that, though, the impending completion of the Huayra coupe's production run raises an obvious question: What next?

If the Zonda's evolution is any guide, we'll see some special-edition Huayras, plus an open-top version, in the coming years. Insiders remain tight-lipped, but the Geneva show has long been a favored venue for unveiling new Paganis—both the original Zonda C12 and Huayra were first shown there—so a special-edition Huayra might appear in Switzerland in March. And with a burgeoning customer base now here in the U.S., Monterey Car Week in August would make the perfect target-rich environment for launching a Huayra

Roadster. That new factory means Horacio Pagani is clearly thinking beyond 2021, when, if the Huayra follows the Zonda's trajectory, an all-new Pagani hypercar is due to make its debut. But it also means he'll soon have the room to make good on rumors a second model will be added to the Pagani portfolio.

The Pagani Huayra is fast, powerful, and extreme. But that's not why cashed-up aficionados buy it. That there might be faster, more powerful, more extreme hypercars, some of which don't cost as much money, is entirely beside the point: To them a Pagani is not just a car but a rolling work of art, the singular product of one man's singular passion, painstakingly created and beautifully rendered. And like all wealthy art collectors, they want more from their favorite artist.

So if Horacio Pagani creates a second model, what sort of car will it be? A track-focused sports car? A four-door? An ultra-luxe SUV? (That's not as far-fetched as you might think; while at Lamborghini Horacio worked on the LM002 off-roader.) Whatever it is, count on it being fast, powerful, and extreme. But it may also be highly customizable, to the point of offering bespoke body panels. And it most likely will cost more than a Huayra.

Because the very rich are different from you and me. ■

To them a Pagani is not just a car but a rolling work of art, the singular product of one man's singular passion, painstakingly created and beautifully rendered.



A HUAYRA parked in what we suppose would be its natural habitat, aka someplace you probably couldn't afford.

THE TALE OF THE ALL-NEW
2016 MALIBU

AS TOLD FROM AN ENGINEERING AND DESIGN PERSPECTIVE.

We sat down with designers Mike Pevovar and Crystal Windham, and integration manager Lance Johnstone to talk about the innovation that went into developing the next-generation Malibu.



Malibu Premier with 2.0L engine offers a GM estimated 32 MPG highway. Official EPA estimates not yet available.





MIKE PEVOVAR & CRYSTAL WINDHAM

GM EXTERIOR AND INTERIOR DESIGN DIRECTORS

In terms of design, what are some defining features of the all-new Malibu?

Mike: The Chevrolet Malibu has a road presence that balances form and function in a way that will turn heads. When creating the “new face of Chevy,” the grille, headlamps and daytime running lamps all laid the foundation for the expressive, windswept body lines. The design is assertive and confident, as emphasized by its solidly planted stance. Long, dramatically sweeping surfaces really make Malibu stand out from the crowd. The whole vehicle feels tidy and taut – something you could throw around a little.

Crystal: Malibu interior design is all about maximizing comfort with style. The instrument panel is down and away for more driver space, but the available touch-screen is up to 8 inches. We offset and slightly floated the screen to use space better. That’s pretty daring for this market, but glare and reach are optimized for a driver. Also, the softest materials are closest to the customers, and the details are outstanding – lots of inserts and accents of different textured leather appointments,

intricate stitching – it’s taking those expressive zones and adding more. We want to surprise people, not just the first time, but the second time, third time – like, “Wow ... they have this little pocket here for my umbrella!” and “Wow ... so this is what my car looks like at night!”

How do interior and exterior design elements of the all-new Malibu complement each other?

Mike: The extra 1.3 inches of rear leg room set the stage for exterior design – it stretched everything, so we used that to set up body proportions to make the vehicle look lower, longer and wider. Also, the sixth rear quarter panel window not only increases visibility and brings more sunlight inside, it helps make the car look lighter, more airy and more spacious from the outside.

Crystal: When you start with a solid exterior foundation with correct proportions, the interior design architecture comes together naturally, and we can focus on improving visibility and comfort. I always say the exterior draws you in, but the interior keeps you there. Drivers spend so much time in their car, so it should feel like a second home.

“We want to surprise people, not just the first time, but the second time, third time...”

Crystal Windham, INTERIOR DESIGN DIRECTOR



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The 2016 Malibu is quieter, offers improved mileage and better handling. How could you improve Malibu on so many dimensions simultaneously?

The key is integration – working with all of the vehicle components and vehicle teams simultaneously to create the lightest, best performing structure for the vehicle. The ultimate goal was to design Malibu with surprising MPG with less mass, but no reduction in performance. Integration allowed us to work through all of the consequences of using one part or another, and combining components. It allowed us to optimize more and compromise less, and it really paid off in the all-new Malibu. We were able to remove nearly 300 pounds from the vehicle – making it the lightest vehicle in its class, all the while offering an estimated 37 MPG highway!

What technologies aided in optimizing vehicle integration with the Malibu design team?

Computer-assisted engineering has progressed to the point where it allowed us to explore and virtually evaluate more design alternatives for the new Malibu than ever before. This gave us new insights by showing us how these alternative designs for the vehicle structure could improve performance across numerous different vehicle-performance dimensions. These internal structural improvements then paved the way for new external design considerations and possibilities. The engineering improvements optimized performance and mass, enabling MPG and also had an impact on the exterior’s great design.





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By winning GT Academy season 1, Bryan Heitkotter went from gamer to amateur driver for Nissan. Now he's leveled up once again — this time on a real track. With his second top-five finish overall in the 2015 Pirelli World Challenge, Bryan and his GT-R[®] NISMO[®] GT3 have broken away from the amateurs to race with the GT pros. For something he's always considered a dream job, this is quite the promotion. The other racers always joked they could never take a gamer seriously. Now when Bryan spies the competition in the rearview mirror, he's the only one laughing.

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